The Chemical Age

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Contents

NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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Dr. Levinstein's Plea

IN his speech at the Ramsay Chemical Dinner at Glasgow on Tuesday evening Dr. Herbert Levinstein took up the theme Mr. Ormsby-Gore introduced at the recent joint chemical dinner in London, and developed it into a general plea for science teaching as a pure instrument of education or culture, and not merely as a preparation for a profession or industry. Dr. Levinstein, treating attack as the best form of defence, carried the war into the camp of the classicists, and claimed that there is to be found in modern scientific discoveries far more romance and live history than in the grammar and literature of dead tongues or in the textual niceties of ancient MSS.—if, that is, the right interpreter can be found, as the atom has found an interpreter in Bragg and others. The case was stated with life and imagination, and Dr. Levinstein's own speech was evidence that the sense of minute exactitude that research is supposed to develop is not irreconcilable with the larger vision of things. One often finds, indeed, in men whose work has been largely in the laboratory a quite fastidious sense of literary style. At the same time the tradition, we fear, will persist that the man of books is essentially different from the man of bottles, and that the fetters of scientific method tend to hamper flight into creative literature and poetry.

This side of Dr. Levinstein's address appears to have made its appeal to a wider public than chemists, but for the chemist himself there were points of interest. That picture of Dr. Ter-Meer, for example, is almost a lyric—the picture of the original house in which the chemist lived and worked, surrounded by impressive modern installations largely the outcome of his own studies; the memory of those early days when he was his own research chemist, works chemist, works manager, costing department, and all the rest. It is not impossible that such a career might even yet be repeated by a man of sufficient character, but modern tendencies are rather against it. Large scale team work is now the fashion, each unit being disciplined to play its part in the vast industrial orchestra. There is no real reason why individual achievement should be no longer possible; the difference is that such achievements will be no longer attained in isolation but will be linked up with the related achievements of all other workers. The reorganisation of British chemical industry that is now proceeding on this broad basis involves a certain re-orientation of interests, but in the long run what is for the benefit of the whole industry must be for the good of all its sections.

Dyestuffs and Dollars

THE returns of the position of the American dyestuffs industry, as embodied in the Census of Dyes for the year 1927, indicate how similar the developments in the United States and this country continue to be. Both countries which before the war were largely dependent on imported colours now supply the greater part of their needs from home production, and in both cases the range of colours continues to expand. On the American side, however, attention is drawn to the fact that while, in the year under review, the export trade increased by 200,000 lb., the value of these exports declined 8 per cent. below the value of the previous year. Adding this to a decline of 11 per cent. in value during 1926, the American export trade in dyestuffs in two years has declined to the extent of 19 per cent. Competition, especially on the part of European trusts, is held to be largely responsible for this, and though higher prices are being obtained for the fast vat dyestuffs now generally in demand, the point remains that manufacturers' profits cannot be going up. The average price of American dyestuffs in 1927 was 39 cents per lb., 3 cents lower than the 1926 average and 21 cents below the figure for 1922. The conclusion reached by

American students of these figures is that increased trade is not bringing increased profits, but that the consumer is reaping the benefit in better dyes at lower prices.

A review of the working of the British Dyestuffs Act by so well-informed an authority as Mr. Woolcock points very much in the same direction. The price of British dyestuffs has been downward for some time, though there can be no doubt that the standard of quality has been appreciably raised. British manufacturers would probably support the testimony of the American makers that increased trade is not bringing in much increase of profit, considering the heavy preliminary work involved in the production of a single new colour. Yet the demand of the consumer is for still lower price levels, on the ground of the keenness of world competition, and there are suggestions from some quarters that at the end of the ten years for which the Dyestuffs Act was originally passed the home industry should be able to hold its own in world markets without any adventitious aids. These views may not be rigidly insisted on when in two year's time the Act automatically comes to an end, but it seems clear that for the future the dyestuff manufacturer may have to depend more on economies in production and organisation for the maintenance of his industry, though he will emphatically reply that no margin exists for such economies. In the meantime he may derive such comfort as is possible from the knowledge that his American rival is troubled with exactly the same problems.

"All British" Salt

THE magistrate's decision at the Old Street Police Court, London, last week, in a case in which foreign salt was alleged to have been sold as of "all British manufacture," seemed inevitable on the facts disclosed in evidence. An East End wholesale dealer in salt had sold cartons of salt bearing the terms "All British manufacture," and also an intimation that the salt was approved for Kosher purposes. In connection with Passover celebrations it is the custom for a Rabbi to attend at the Salt Union Works at Winsford for the purpose of seeing salt manufactured and, if satisfied, of issuing a certificate that it is fit for Passover use. On analysis it was found that the salt described as of "All British Manufacture" was foreign material prepared from mineral rock salt. The defence was a plea of innocence, but the magistrate imposed a fine of £10 and costs. The prosecution was undertaken, under the Merchandise Marks Act, by the Salt Manufacturers' Association.

The De Vecchis Process

THE De Vecchis sugar process, to which frequent reference has been made in our columns, appears to be steadily extending its operations, and to be bringing orders for chemical plant to this country. We learn, for example, that the firm of George Scott and Son (London), Ltd., who have been concerned in the development of many works overseas, have just received instructions for one of their large dryers for the drying of sugar beet, to be worked in conjunction with the De Vecchis process, and to be erected in France for the next beet season. This drying plant, we understand, is very similar to the dryers put down at Sanguinetto in Italy, which have passed successfully through their third season. A similar drying installation has also been erected in Russia, and is expected to be put in operation almost immediately. The dryers for Russia and France, it is understood, embody certain minor improvements resulting from the experience gained with the Sanguinetto dryers.

Books Received

SOLUBLE SILICATES IN INDUSTRY. By James G. Vail. New York: Chemical Catalog Co., Inc. Pp. 443.

ESSENTIALS OF QUALITATIVE CHEMICAL ANALYSIS. By John C. Ware. London: Chapman and Hall, Ltd. Pp. 351. 17s. 6d.

The Calendar

Dec. 15	North of England Institute of Mining and Mechanical Engineers: General Meeting. 2.30 p.m.	Newcastle-on-Tyne.
17	Chemical Industry Club: "Problems Connected with National Defence." J. Davidson Pratt.	2, Whitehall Court, London.
17	Institute of Chemistry and Society of Chemical Industry (Yorkshire Sections): "The Storage of Steam in Industrial Plants." Dr. E. G. Ritchie.	Leeds.
18	Society of Dyers and Colourists (Huddersfield Section): Dr. Arthur E. Everest. "The Application of Azoic Colours to Wool."	Huddersfield.
19	Society of Chemical Industry (Nottingham Section): "The Effects of After-Treatment on the Degree of Aggregation and Fastness Properties of Insoluble Azo-colours on the Fibre." Dr. F. M. Rowe. 7.30 p.m.	University College, Nottingham.
19	Society of Glass Technology. 2.30 p.m.	London.
20	Chemical Society: Ordinary Meeting. 8 p.m.	Burlington House, Piccadilly, London.
21	Society of Dyers and Colourists (Scottish Section): Paper by R. S. Horsfall.	Glasgow.
1929 Jan. 3	Society of Chemical Industry (Bristol Section). Joint Meeting with the Chemical Society. "Some Properties of Flame and Combustion." Professor W. E. Garner. 7.30 p.m.	University, Bristol.
7	Society of Chemical Industry (London Section). Joint Meeting with the Fuel Section. "The Action of Hydrogen upon Coal." J. Ivon Graham. 8 p.m.	Burlington House, Piccadilly, London.
7	Institution of the Rubber Industry (London Section): "Factory Organisation in the Rubber Industry Affecting the Conditions of the Worker. F. W. Bennett."	Blackfriars Theatre, Lever House, London, E.C.
8	Hull Chemical and Engineering Society: "Electric Cranes." G. R. Adamson and C. F. Tinker. 7.45 p.m.	Grey Street, Park Street, Hull.
8, 9 & 10	Society of Glass Technology: Annual Exhibition of Scientific Apparatus.	Imperial College of Science and Technology, London.
9	Institute of Metals (Swansea Section): "Pulverised Coal in Metallurgy." G. E. K. Blythe. 7 p.m.	Thomas's Café, High Street, Swansea.
9	Institute of Fuel: "The Application of Pulverised Fuel Firing for Lancashire Boilers." H. A. S. Gothard.	London.
10	Institute of Chemistry (Manchester Section): "Pregl's Micro-methods of Analysis." H. D. K. Drew.	Manchester.

Chemical Engineers' Conference on Drying

Papers and Discussions

Below is given an account of the later proceedings of the "Conference on Drying," held by the Institution of Chemical Engineers at Burlington House on Thursday and Friday, December 6 and 7. The earlier proceedings were covered in last week's issue of THE CHEMICAL AGE.

IN a paper on "Film and Spray Drying," presented to the conference on Thursday, December 6, Mr. J. A. Reavell said the film drier consisted, essentially, of a heated drum which revolved about a horizontal axis. The solution or suspension from which the water was to be removed wetted the drum surface at one part of its travel, the dehydrated residue adhering to the drum, and when sufficiently dry it was scraped from the drum surface.

For certain materials this type of drier had many advantages over ordinary drying floors or driers, in which the material under treatment was dealt with in comparatively large masses. For instance, as a general rule the finished product leaving the film drier was finely powdered, the drying was perfectly regular and even, the plant was continuous in operation, and for attention required practically no labour or skilled supervision.

Film driers of several types were constructed, the two principal types being vacuum and non-vacuum machines. Each of the above types might have double or single drying drums. The general considerations applying to the problem were identical for all types of machine and might be discussed under the three following headings :—

1. The method of feeding the product to be dried to the drum.
2. The drying drum.
3. The knives for the removal of the dried material.

Feeding Arrangements

Dealing first with the feeding arrangements, in order to obtain the maximum output from the machine it was necessary to have the thickest possible film that would dry in the time occupied in the passage of the film from the feed tray to the knives. The thickness of the film was limited in practice and varies with different materials. The feed tray should be arranged to give an area of contact between the liquid and the drying drum which was just sufficient to evaporate the amount of water necessary to leave an adherent moist residue of the optimum thickness for satisfactory drying on the drum. The older types of film drying plant were built with a feed tray in which the lower part of the drum was submerged, and the heating surface exposed to the liquor was in nearly every case very much in excess of that necessary to produce the film in the manner described above.

In designing the feed arrangement for the film drier it was necessary to investigate closely the conditions which must be fulfilled in order to obtain the maximum output from a given sized machine, consistent with satisfactory and continuous working, as the design of this part determined the nature of the film which was picked up, upon which the whole of the subsequent operation depended.

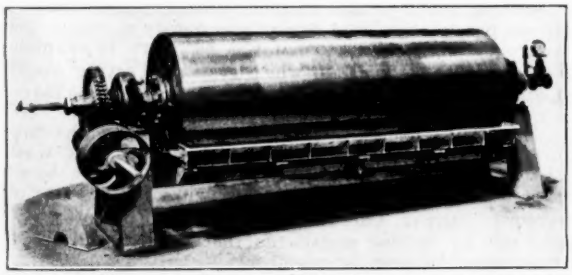

FIG. 1. KESTNER PATENT FILM DRIER, SHOWING FEED TRAY SIDE OF MACHINE.

In order to overcome the disadvantages of the dipping tray or the spray system, a feed tray had been patented in which the area of contact between the liquor and the drying drum was under complete control. In this system the feed tray was situated at one side of the drum in a position between the horizontal and vertical diameters. The liquid to be dried was fed into the tray at a constant rate, the level being maintained by overflows, the height of which were adjustable.

The steam pressures employed were about 40 lb. per sq. inch. Although driers were constructed to work at considerably higher pressures it was found that with the majority of materials the increase in drum temperature, obtained by the use of higher pressures, did not materially increase the output, or the dryness of the finished product.

The Scraper

As regards the arrangement for removing the dry material from the drum, machines were first built with a knife extending along the length of the drum and forced against the drum surface by means of springs, or a system of weights and levers. With this type of scraper, particularly on a large machine, trouble was experienced due to the uneven expansion of the scraper blade, the latter being at a higher temperature where it was in contact with the drum at the cutting edge, than its lower part, where it was not heated in this way. In order

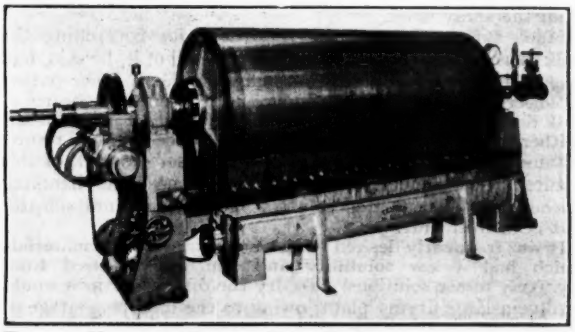

FIG. 2. KESTNER PATENT FILM DRIER, SHOWING SCRAPER KNIVES FOR REMOVAL OF DRY MATERIAL.

to overcome this trouble a system had been patented whereby a number of independent knives were employed, these knives being staggered so that the whole of the drum surface was covered.

Diagrams were shown giving the connection between the speed of the drum, the output of dried material, and the moisture content of the dried material for a film drier working on a slurry of constant composition and adjusted to give its maximum output for each drum speed. It was seen that although the output increased with increase of drum speed the moisture content of the powder increased slowly, and at higher speeds commenced to increase more rapidly. These results were typical of those obtained when working with suspensions of solids in water. Another diagram illustrated the connection between the output and the moisture content of the powder leaving the machine when working at a constant drum speed, but with varying steam pressure. These curves were obtained from the simplest class of material that was handled on the film drier, *i.e.*, a suspension of finely divided solids in water. When a solution was being handled, the curves had no regular form, and the optimum drying conditions must be determined for each particular material.

Spray Drying

The recent progress in the design of spray drying plant had enabled the process to be applied in industries which hitherto had not considered the use of any such form of drying of practical interest. For the production of milk powder and certain other similar products, spray drying was able to compete with other methods, but driers designed on these lines could never compete in industries where it was necessary to keep the cost of drying to a minimum.

One of the first criticisms of spray drying had been that the thermal efficiency was low and, therefore, fuel costs were

high. This was a perfectly legitimate objection when the spray drier was operated by means of a steam heated air heater, particularly if the air on leaving the spray drying chamber discharged to the atmosphere. There were two ways in which the fuel costs for spray drying had been greatly reduced. Firstly, the cost of providing the heated air necessary for the operation of the drier could be kept to a minimum, if the drying scheme was treated comprehensively, and the whole of the working conditions were taken into account. Another example of spray drying plant operated with a low fuel cost was that in which the air heater was operated by means of flue gases from existing boiler plants. A third example of the method by which low fuel costs could be obtained was probably the simplest method of all. In this case, the flue gases were taken direct into the drying chamber, and if these gases were originally passing to waste the cost of the heat for the spray drying was negligible.

Bulk Density of Powder

The bulk density of the powder produced in spray drying plants had been an objectionable feature in certain cases. In food products it had not usually been serious, but with other materials it was necessary to obtain the powder in as dense a form as possible, in order to reduce packing and carriage costs. By a careful study of the conditions influencing the bulk density of the powder it had been possible to modify this, where necessary, and in many instances a product as dense as that produced by any other drier could be obtained from the spray drier.

Much information on the conditions for controlling the bulk density was given by Mr. Reavell. All of it, he said, had been obtained on work carried out with the Kestner patent atomiser. There was no evidence that a similar control of bulk density could be obtained with any form of jet atomiser, neither had information been published concerning the results obtained by any other form of disc atomiser on work of this nature. The difficulty formerly experienced in handling viscous and concentrated solutions (such as sodium silicate) had been overcome.

It was frequently desired to obtain in powder form materials which had a low solubility and which crystallised from relatively dilute solutions. To dry the dilute solutions would involve a large drying plant, owing to the high percentage of water that had to be removed. If, however, such a solution were concentrated and the crystals allowed to separate, it did not follow that this could not be spray dried to give a resultant product as a thoroughly dehydrated powder. The magna of crystals and mother liquor could be passed through a homogeniser, and the concentrated suspension of finely divided crystals could then be fed to the spray drier and dried. This method was of particular value where it was required to dehydrate a liquor which contained several constituents, one or more of which had a relatively low solubility. In concentrating such a liquor the constituents would separate, and it was difficult to obtain a homogenous dry powder, except by the means described above.

Discussion

In reply to a question from Professor W. E. Gibbs, Mr Reavell said that the efficiency of the film drier should be 80 per cent. or a little more, *i.e.*, it should remove 80 lb. of water from the product using 100 lb. of steam. Much depended, however, upon how it was protected against radiataion, and upon the place at which it was installed. The efficiency of the spray drier was anything from 50 to 90 per cent., depending entirely on the arrangement of the plants and the units one worked with, and the arrangements for drying the air.

The word "efficiency," however, might mean anything. If one could put a liquid into a drier and produce a powder, and at the same time eliminate an evaporator, some form of hearth drier, a grinding machine, a sieving apparatus and all the labour attached thereto, one did not gain a true picture by considering merely the efficiency, on heat balance, of the spray drier. The great advantage was the saving in upkeep and labour resulting from the use of a continuous and easily-operated plant.

Drying by Pressure

Professor J. W. Hinchley followed with a paper on "Drying by Pressure." He adduced facts suggesting that with materials consisting of hard particles, the removal of water below 30 per cent. by simply pressing the mass was not likely to be effective. Filtration in an ordinary filter press produced a drier cake or closer packing than when leaf filter was used. The use of rollers to remove water from woven and felted materials was well known.

Some years ago, said Professor Hinchley, he was engaged in the study of the commercial utilisation of peat, and for theoretical reasons came to the conclusion that no method that involved the use of heat directly for the removal of water from peat was likely to be successful, and that if pressure methods could be applied, success was within reach.

Drying Peat by Pressure

Peat, as it occurred in a drained bog, usually contained 85 to 90 per cent. of water, and could usually be pressed, cold, to contain about 80 per cent. of water, that was, four parts of water to one part of peat. Further pressure in the cold invariably failed to produce any effective removal of water, owing to the production of an impermeable skin through the presence in the material of a mucilage which effectively choked the pores of any filtering medium provided. In the course of a research extending over several years, it was found possible to devise a press for removal of water in which the mucilaginous character of the peat was destroyed by steam, when the application of increasing pressures up to 400 lb. to the sq. in. removed three-quarters of the water present in the peat. The principle of the working of the press in this case was similar to that adopted in the edible oil industry, and although, mechanically, it might be subject to criticism, the press had proved absolutely satisfactory in practical use. The press consisted of a series of chambers 4 in. wide, provided with pistons and a suitable head, which could be removed for charging.

Professor Hinchley also dealt with the use of pressures for reducing the water content of graphite pastes for lead pencil production.

Vacuum Dryers

On Friday, December 7, Mr. G. W. Riley read a paper on "Vacuum Dryers." In considering how the absence of the uncondensable gaseous carrier for the vapour gave the vacuum dryer a number of advantages compared with the atmospheric dryer, Mr. Riley touched on the freedom from contamination or spoilage of delicate products; the smaller loss of powdery products; the lower fuel consumption; the more compact design; the lower power requirements. Vacuum drying, he pointed out, facilitated the use of live and exhaust steam. It gave rise to quicker drying and drier products, and permitted of more complete control of drying conditions. It was possible to dry with recovery of solvents and volatile products, and freedom from nuisance was ensured.

Mr. Riley then dealt with various designs of dryer, such as the shelf dryer; mixer dryers for batch working; continuous dryers for granular material; and continuous film dryers of the drum and film band type.

Discussion

The Chairman (Mr. J. A. Reavell) expressed the view that it was very dangerous to get into the habit of making comparisons between one dryer and another. Chemical engineers had problems put to them, and drying was merely a step in the processes involved. Therefore it was necessary to examine the process, and to ascertain which system of drying would best suit the particular conditions. Another point to be borne in mind was that drying was mainly a question of temperature difference. The tendency in vacuum drying was to go to very high temperatures, in some cases as high as 300° C., carried out by oil heating, and it was necessary to watch these things very carefully, especially as chemical engineering was one of the younger sciences. Care should be taken that they were not caught out by making statements that could be criticised by their elder brethren.

Mr. Riley, in his reply, said he had no intention of giving the impression that he regarded the vacuum dryer as the best in all circumstances. As a matter of fact, he was interested in other types of dryers also, and the paper carefully stated that vacuum drying had a great advantage, in his opinion, for low temperature conditions. Perhaps the construction that had been put upon the paper in this respect was due to the fact that he had tried to make the subject as controversial as possible.

At the morning session on Friday, in addition to the above paper, there was one on "Rotary Dryers," by Mr. T. J. Horgan.

Drying of Agricultural Products

In a paper on "The Drying of Agricultural Products," Dr. B. J. Owen said that, as regards farm crops, the harvest operations consisted of drying the material down to 10—25 per cent. moisture by natural means; the product could then be stored without losses from fermentation and other bacterial actions. Harvesting was still dependent on favourable weather, and any method of artificial drying which would enable the farmer to approximate to factory methods and to work to a programme would be of great economic value.

The general principles of artificial drying were to assist and accelerate the work of natural agents by passing through the material a volume of heated air. Three successful drying methods had been evolved: (1) The stack method, where a stack of the material was built, into which hot air was blown; (2) the hopper or tray method, in which the material was spread in a tray over a wire grid through which the hot air was blown; and (3) the conveyor belt method, used for large scale continuous work. Certain products, such as threshed grain, hops, etc., needed special apparatus. Dr. Owen touched on the drying of sugar beet and also on potato drying, which was very vital in Germany.

In a paper on "Some Drying Problems of Tropical Africa," Mr. A. Chapman Barnes discussed the drying of ground nuts, palm kernels, copra, and cloves.

Dr. S. G. Barker read a paper on "The Hygroscopic Nature of Textile Fabrics."

Traders' Presentation to Mr. V. Blagden

Chemical and Dyestuff Traders' Luncheon

A VERY pleasant function took place on Tuesday, at the Comedy Restaurant, Panton Street, London, at a luncheon held by the British Chemical and Dyestuff Traders' Association, when a presentation was made to Mr. Victor Blagden in recognition of his valuable services to the Association. Mr. A. F. Butler, chairman of the Association, presided, and there was a large attendance.

In proposing the toast of "The King," the chairman referred to his illness, and expressed an earnest hope for his speedy recovery.

Mr. Blagden's Services

The chairman, Mr. Butler, in making the presentation, said that they, a company fully representative of the chemical merchants of the country, were there to do honour to their president, Mr. Victor Blagden. This occasion had been chosen because it was now some seven years since Mr. Blagden first actively associated himself with the combined movement out of which the Association had grown. He made no apology for remarking that in the past there were two traders' associations, and that the influence of the chemical merchant community was, to a large extent, stultified by the friction between the two associations. It was very largely due to the influence and personality of Mr. Blagden that unity was arrived at.

Mr. Blagden became the first chairman, and Mr. Butler said it could safely be said that he (Mr. Blagden) was the only man who, by reason of prestige and personality, and also by reason of infinite tact, could at that time have held the position. Under his leadership, the Association had reached its present position, in which it commanded the respect of friend and foe. For all that the Association was, and for all it had accomplished, the thanks of the members and of the British chemical and dyestuffs traders must be extended in the first place to Mr. Blagden.

Position of the Chemical Merchant

"The way of the chemical merchant is hard," continued Mr. Butler. "He is beset on the one side by restriction after restriction, imposed by an unsympathetic authority, and on the other side by the chemical manufacturers, whose policy is to develop their own selling organisations to the elimination of the trader. It seems to be forgotten by both authority and manufacturer alike that the prosperity of this country has been built up upon the work and achievement of the merchant adventurer, and I do not hesitate to say that, in spite of the present trend of events, the merchant will remain an important part of the mechanism of the machine of commerce."

In Mr. Blagden they had a leader who commanded their respect, their esteem, and their united support, and they hoped that the way would be clear for him to fill his present honourable position, as president of the Association, for many years to come. The wish was expressed by many members of the Association to make the luncheon the opportunity of conveying to Mr. Blagden the feelings of the members, and of asking him to accept a small token of their great respect and esteem.

He then presented to Mr. Blagden a water-colour drawing by Birket Foster.

Mr. Blagden on the German Chemical Combine

In accepting the gift, Mr. Blagden said that after the sumptuous luncheon, he had some difficulty in rising. He thanked Mr. Butler for his kind words, and assured them that the gift would always occupy a place of honour in his home.

Recently, said Mr. Blagden, he had spent a week-end on the Rhine with a leader of the great German chemical combine, who had assured him that the concern was now so cumbersome and complicated that it could no longer be properly administered. When the trust was formed, they had intended to eliminate the dealers and merchants. This, they now realised, was a mistake, and they wanted the dealers and merchants back. Mr. Blagden hoped that leaders nearer home would take the lesson to heart. The merchant was absolutely necessary.

Mr. A. Home-Morton proposed as a toast "Mr. Blagden, and his family, and may his collection of Birket Fosters be the finest in the world," and the toast was drunk with enthusiasm.

After the toast of "The Chairman," proposed by Mr. Stott, had been honoured, Mr. Butler proposed the toast of "Absent Friends," coupled with the names of Mr. F. T. T. Reynolds and Mr. S. J. C. Mason (absent through illness), and the provincial members. Finally, Mr. Butler proposed the toast of the secretary, Mr. Bromfield; who, he said, was the best secretary that a trade association had ever had or was ever likely to have. Mr. Bromfield, responding, said that he had had a very happy time as their secretary, and hoped that he had been of some use to the Association.

J. and J. Cunningham, Ltd.: Terms of Share Exchange

THE *Financial News* states that the terms of exchange offered to shareholders of J. and J. Cunningham, Ltd., by Scottish Agricultural Industries, Ltd., are announced as follows:—For each 5 per cent. cumulative preference share of £10 in J. and J. Cunningham, holders are offered in exchange nine 6 per cent. cumulative preference shares of £1 each in Scottish Agricultural Industries credited as fully paid up. For each ordinary share of £10 in J. and J. Cunningham, holders are offered in exchange 5·45 preference shares of £1 each and 10·909 ordinary shares of £1 each in Scottish Agricultural Industries credited as fully paid up, and in addition a certain number of deferred shares of £1 each. It is a term of the offer which is made to holders to exchange their shares that they shall immediately after incorporation of the new company transfer five-eighths of their holding of ordinary shares in the new company to Imperial Chemical Industries, Ltd., at the price of £1 per share. Holders may take payment in cash or at their option either in whole or in part in ordinary shares of Imperial Chemical Industries, calculated at their middle market price on the date on which the sale to Imperial Chemical Industries is completed. The directors of Imperial Chemical Industries have given an undertaking that, subject to assents being received on or before December 10 from holders of 95 per cent. of shares in each of the merging companies, they would immediately proceed with the incorporation of Scottish Agricultural Industries, guarantee the preference dividend, and carry through the purchase of five-eighths of the ordinary capital of the company.

At the annual meeting on Wednesday, Mr. A. P. Cross, the chairman, said that assents had already been received both from their own and other merging companies, which would assure that Scottish Agricultural Industries would be incorporated and would function as from January 1, 1929.

Chemical Trade Returns for November

Imports, Exports and Re-Exports All Show Increases

An increase over November, 1927, in imports, exports and re-exports is shown in the Board of Trade returns for November, just issued. Imports were valued at £1,486,042, an increase of £246,189; exports were worth £2,294,388, an increase of £15,502; and re-exports were valued at £99,699, an increase of £41,209. For the first eleven months of the year imports at £14,091,980 showed an increase of £101,126; exports increased by £1,978,216 to £23,383,791; and re-exports at £945,430 showed an increase of £7,633.

Imports

	Quantities Month ended November 30,		Value Month ended November 30,	
	1927.	1928.	1927.	1928.
			£	£
CHEMICAL MANUFACTURES AND PRODUCTS—				
Acid Acetic ..... tons	1,064	905	45,630	41,485
Acid Tartaric.....cwt.	845	3,040	3,982	17,452
Bleaching Materials ,,	11,905	12,244	10,950	9,599
Borax..... ,,	10,484	3,220	8,596	3,123
Calcium Carbide .. ,,	105,605	68,640	51,631	42,395
Coal Tar Products Value	—	—	11,002	27,438
Glycerin Crude . cwt.	696	100	2,312	219
Glycerin Distilled ,,	295	99	1,360	378
Red Lead and Orange Lead..... ,,	2,237	3,504	4,003	4,735
Nickel Oxide ..... ,,	—	49	—	228
Potassium Nitrate (Saltpetre) .....cwt.	9,514	11,845	9,967	12,352
All other compounds ,,	196,076	293,488	60,731	84,158
Sodium Nitrate .. ,,	193,613	130,132	104,825	64,824
All other Compounds ,,	36,724	48,344	20,877	32,684
Tartar, Cream of .. ,,	2,683	2,683	12,116	11,754
Zinc Oxide ..... tons	904	1,108	29,722	30,522
All other Sorts ...Value	—	—	249,269	545,904
DRUGS, MEDICINES, ETC.—				
Quinine and Quinine Salts .....oz.	202,885	158,692	12,826	11,443
Bark Cinchona ....cwt.	182	2,596	975	10,482
Other Sorts .....Value	—	—	213,672	156,958
DYES AND DYESTUFFS, ETC.—				
Intermediate Coal Tar Products.....cwt.	82	94	935	1,221
Alizarin ..... ,,	83	80	1,576	3,158
Indigo, Synthetic . ,,	1	—	7	—
Other Sorts ..... ,,	4,119	3,212	93,221	75,018
Cutch ..... ,,	2,311	3,381	3,856	5,065
All other Sorts .... ,,	2,676	5,253	12,478	16,706
Indigo, Natural ... ,,	—	—	—	—
Extracts for Tanning ,,	115,531	87,848	124,311	89,837
PAINTERS' COLOURS AND MATERIALS—				
Barytes, ground, and Blanc Fixe .....cwt.	63,969	78,872	13,693	17,340
White Lead (dry) ,,	12,927	15,437	17,492	25,200
All other Sorts .... ,,	85,085	95,346	117,838	144,364
Total of Chemicals, Drugs, Dyes, and Colours.....Value	—	—	1,239,853	1,486,042

Exports

CHEMICAL MANUFACTURES AND PRODUCTS—				
Acid Sulphuric ....cwt.	19,604	13,698	6,218	4,171
Acid Tartaric ..... ,,	2,303	1,264	14,026	9,234
Ammonium Chloride (Muriate) ..... tons	482	449	10,476	7,935
Ammonium Sulphate—				
To Spain and Canaries tons	4,308	11,417	40,897	108,432
,, Italy ..... ,,	370	377	3,664	3,395
,, Dutch East Indies tons	32	111	319	1,098
,, Japan ..... ,,	7,363	9,498	71,424	91,670
,, British West India Islands and British Guiana tons	1,262	588	12,295	5,519
,, Other Countries ,,	7,472	11,052	72,552	106,700
Total ..... ,,	20,807	33,043	201,151	316,814
Bleaching Powder (Chloride of Lime) .....cwt.	79,731	78,922	24,365	21,642
COAL TAR PRODUCTS—				
Anthracene .....cwt.	—	3	—	2
Benzol and Toluol gall.	59,455	2,167	2,957	305
Carbolic Acid.....cwt.	18,262	19,979	33,256	36,066
Naphtha ..... gall.	17,568	8,466	1,024	864
Naphthalene .....cwt.	738	3,906	489	1,784
Tar Oil, Creosote Oil, etc. .....gall.	4,955,970	5,103,233	181,035	167,229
Other Sorts .....cwt.	39,986	81,860	27,098	32,894
Total ...Value	—	—	245,859	239,144
Copper, Sulphate of tons	3,293	2,793	70,549	64,788
Disinfectants, Insecticides cwt.	39,131	41,999	95,173	109,569
Glycerin Crude ... cwt.	905	1,075	2,461	1,545
Glycerin Distilled .. ,,	11,272	13,111	51,731	41,118
Total .... ,,	12,177	14,186	54,192	42,663
POTASSIUM COMPOUNDS—				
Potassium Chromate and Bi-chromate ... cwt.	3,397	849	6,127	1,606
Potassium Nitrate (Saltpetre) ..... cwt.	1,332	1,213	2,546	2,256
All Other Sorts ... ,,	4,515	4,146	19,457	15,694
Total .... ,,	9,244	6,208	28,130	19,556
SODIUM COMPOUNDS—				
Sodium Carbonate, including Soda Crystals, Soda Ash and Bi-carbonate .....cwt.	499,050	431,808	145,225	120,250
Soda Caustic ..... ,,	241,132	150,990	169,580	107,179
Sodium Chromate and Bi-chromate ... cwt.	3,292	4,347	4,417	5,990
Sodium Sulphate .. ,,	397,991	315,075	44,565	34,718
All other Sorts .... ,,	63,015	55,520	71,889	72,630
Total .... ,,	1,204,480	957,740	435,676	340,767
Zinc Oxide .....tons	111	128	4,403	4,983
Chemical Manufactures, etc. all other Sorts ...Value	—	—	330,322	338,251
Total of Chemical Manufactures and Products (other than Drugs and Dyestuffs) ....Value	—	—	1,520,540	1,519,517
DRUGS, MEDICINES, ETC.—				
Quinine and Quinine Salts.....oz.	253,706	171,585	25,284	15,153
All other Sorts ..Value	—	—	284,006	295,425
Total .... ,,	—	—	309,290	310,578
DYES AND DYESTUFFS—				
Products of Coal Tar cwt.	8,807	13,877	63,970	94,560
Other Sorts ..... ,,	8,945	10,499	9,355	13,156
Total .... ,,	17,752	24,376	73,325	107,716
PAINTERS' COLOURS AND MATERIALS—				
Barytes, ground, and Blanc Fixe .....cwt.	1,881	3,576	752	2,203
White Lead (dry) . ,,	5,797	3,632	9,788	7,293
Paints and Colours. ,,	58,228	45,356	115,538	92,352
Paints and Enamels Prepared (including Ready Mixed) ..... cwt.	40,041	49,369	132,701	149,378
All other Sorts .... ,,	65,152	59,627	116,952	105,351
Total .... ,,	171,099	161,560	375,731	356,577
Total of Chemicals, Drugs, Dyes and Colours.....Value	—	—	2,278,886	2,294,388

Re-Exports

	Quantities Month ended November 30, 1927.	Quantities Month ended November 30, 1928.	Value Month ended November 30, 1927. £	Value Month ended November 30, 1928. £
CHEMICAL MANUFACTURES AND PRODUCTS—				
Acid Tartaric.....cwt.	57	131	468	1,044
Borax..... ,,	393	641	352	556
Coal Tar Products Value	—	—	11	33,835
Potassium Nitrate (Saltpetre) .....cwt.	88	178	114	310
Sodium Nitrate .. ,,	104	2,130	56	1,151
Tartar, Cream of .. ,,	466	647	2,221	3,122
All other Sorts ...Value	—	—	11,048	13,090
DRUGS, MEDICINES, ETC.— Quinine and Quinine Salts .....oz.	28,614	30,486	2,641	2,909
Bark Cinchona (Park Peruvian, etc.) . cwt.	259	219	1,051	903
All other Sorts ...Value	—	—	31,070	35,171
DYES AND DYESTUFFS— Cutch ..... cwt.	528	1,111	825	1,539
All other Sorts .... ,,	465	161	2,943	1,103
Indigo, Natural ... ,,	15	5	480	143
Extracts for Tanning,,	993	907	1,312	1,099
PAINTERS' COLOURS AND MATERIALS .... cwt.	1,180	982	3,594	3,326
OTHER ARTICLES ... ,,	—	—	304	398
Total of Chemicals, Drugs, Dyes and Colours .....Value	—	—	58,490	99,699

Dr. Levinstein on the Cultural Value of Chemistry

Prospects before the Young Chemist

AT the Ramsay Chemical Dinner of 1928, held in Glasgow on Tuesday, the toast of the memory of Sir William Ramsay was proposed by Mr. C. M. Aitchieson, K.C., and responded to by Dr. Herbert Levinstein, President of the Society of Dyers and Colourists and Chairman of the Council of the Society of Chemical Industry.

Law and Chemistry

In his speech, Dr. Levinstein said that it was appropriate that so distinguished a lawyer as Mr. Aitchieson should propose the toast because there was an old bond between the legal profession and the profession of chemistry. He was not referring to old associations in the Patent Courts, though he had lived through the quarrelsome times when chemical manufacturers carried out research and manufacture on a large scale, it would appear, not for the purpose of self-aggrandisement only, or mainly, but to enable patent counsel to enjoy not only a dignified but also an opulent old age. (Laughter.) No, he was referring to the direction of chemical enterprise by distinguished lawyers. He did not remember whether Mr. Aitchieson had yet taken a leading part in chemical industry, but Mr. Roger Wallace, K.C. was once chairman of the Vidal Dye Syndicate. At the same time he was also acting for the Board of Trade as arbitrator in the granting of compulsory licenses. The dual position he occupied as industrialist and judge aroused criticism. Fletcher Moulton and his team were nearly indispensable to success in the Law Courts.

Lord Moulton, Lord Justice of Appeal, became Director-General of Explosives Supply during the war, and thus became the head of the greatest chemical production Great Britain had ever had. Afterwards he became chairman of the British Dyestuffs Corporation and incidentally, his own immediate chief. A recent event has shown that the Woolsack was not the barrister's final goal, but that Lord Chancellors might rise from that softly padded seat to sit on "industrial boards." Thus men still rose on stepping stones of their dead selves to higher things. (Laughter.)

Careers in Chemistry: A German Example

Of the academic world of chemistry and of academic research he would only say that those in industry owed to them all they were, all they had done. He rejoiced to see the increasing contact between the academic and the industrial world of chemistry to their mutual advantage. In this there had been a great change since he was a boy, but the greatest changes had taken place in industrial chemistry and in the status and prospects of industrial chemists. Clearly the formation of giant combines such as the I.C.I. was a matter of the greatest importance to young men entering the profession.

When he went over to Germany with General Hartley's Mission in January, 1919, among the factories whose work on explosives or poison gas they investigated was one of Weiler-Ter-Meer at Uerdingen on the Rhine. He had forgotten how many thousand hands they employed, how many hundred acres their works covered, how many thousand tons of acids and nitro bodies they manufactured during the war, but he could still recall very clearly the tall, spare, courteous and dignified figure of Dr. Ter-Meer with his deerhound beside him. He could see him standing in front of a small red brick house, piously preserved, in the middle of those great works, reinforced concrete structures, and saying: "This is where I started as a young man. Here in these two rooms I ate, drank, slept and worked; here was my laboratory, and there I made Magenta; I had two workmen. When I had made a batch I closed down the plant. I then called on my customers and sold it. With the proceeds I bought fresh raw materials and re-started manufacturing." Dr. Ter-Meer was his own research chemist, his own works chemist, his own foreman, his own costing department, his own buyer, his own salesman. All round him some 40 or 50 years later were the monuments of his success in these capacities.

Was such a career possible to-day? In the dyestuff branch? No! In the development of a new invention? Why, certainly. No combines, cartels, or trusts in chemistry could prevent, should they want to, an exceptional man from developing individually, but he must be original. How could they stop a man who was inventive, and not only inventive but a courageous chemist, from repeating that career? For the average well-trained chemist the big combines, conducted as they were with vision, afforded a safer and more secure career on ordered and certain lines than did smaller firms.

The Cultural Value of Science

They heard a good deal to-day of the need for propaganda, for educating the public as to the value of chemists to the nation. He agreed that propaganda was most valuable, not because it mattered to the chemists, but because it mattered to the public to know more than it did of science. He would like to see a knowledge of physics and chemistry and other natural sciences considered to be as much a sign of culture as a knowledge of the classics. They would then soon get an atmosphere in politics and in finance and a social atmosphere favourable to chemists and to the development of chemical inventions. That, properly considered, was much more important to the public than to themselves. Why should not a man who was going up to the university without the intention of entering a profession, as did so many young men, whether their career was to be business, politics or the Civil Service, take a science course instead of classics, history, or law. Properly taught, there was as much culture and useful knowledge to be derived from science as from the humanities.

The date when Ramsay discovered helium gas imprisoned in a stone called Cleveite, now old but a young stone when it first caught its helium and kept it, was of greater interest to a cultured mind, and of far greater importance, than the date of the Battle of Lutzen. This gas still oozed out of earth's caves in tiny quantities, little remnants of what one might well surmise was once present in great profusion. These tiny traces were like jewels found in ancient tombs, revealing old, forgotten culture. To learn that this gas was present in large quantities outside the sun, to find that the spectrum lines of this tiny prisoner found in Cleveite in 1898 were identical with

those found 30 years earlier by Lockyer in the sun was thrilling. The story of why the sun should contain large quantities of helium and the earth tiny quantities was more romantic than the story of the crimes of Cesare Borgia.

The next year the Curies were married, and on their honeymoon they went to Joachimsthall and brought home with them radio-active uranium pitchblende. When they got back to Paris they isolated the radium and then they discovered that radium gave off an emanation which was helium. Was there not something portentous, of world importance in these discoveries? He suggested in all humility that it was more important for the young to know the story of helium and far more fascinating than to be steeped in the tiresome orations of Cicero.

The new discoveries had led to a wonderful comprehension of the nature of matter and of electricity. Those who had heard a master hand, Sir William Bragg, on that kind of topic would know how fascinatingly those things could be taught. It was no more difficult, to say the least, than to master the grammar of a dead tongue or to bother about the glosses made by some ingenious but narrow scholiast in an early manuscript.

To-day, in the hands of masters such as Eddington and Milne the stars were telling a wonderful story; the history of their own birth, the story of our own earth. If some old bone revealed to the anthropologist the story of our evolution, was it not worth our while knowing? If some old stone released helium after æons they could not measure, and that helium turned out to be a brick left over by the master builder of the universe and Ramsay found it, was that not enough to immortalise the name of Ramsay? Was not that a cultural achievement equal to that of suggesting a brilliant emendation in a Virgilian text? And yet they called the one a cultured scholar, a pursuer of the humanities, the other merely a man of science.

A Warning against Boasting

The surest way for their great profession to take its due place in the estimation of their fellow countrymen was, therefore, to ensure that an increasing number of our youth were taught science, particularly chemical science, not to equip them for any profession, but as they learned classics—to train their minds, to teach them to think, in short to educate them. But let them not fall into the error in their propaganda of telling the public that chemists were great men and so useful and how under-rated, and asking the public "Where would England be but for its chemists." Personally he did not much care about reading that English chemists were now much better than German chemists. He was not at all sure that it was true. It was inclined to sound rather vulgar and blatant and therefore opposed to the spirit of their delightful science.

Important Salt Prosecution

Foreign Salt Sold as "All-British"

THE sale of foreign salt as of "All-British manufacture" was the subject of a prosecution, taken at the instance of the Salt Manufacturers' Association, at Old Street Police Court, London, on Friday, December 7. The proceedings were brought under the Merchandise Marks Act, which prescribes penalties for the sale of commodities under a false trade description. The defendants were Mrs. Sarah Fox, wholesale dealer in salt and other goods, of Humberstone Street, London, and Mrs. Fanny Goldstein, a retail shopkeeper. Mr. H. D. Roome, Treasury Counsel, appeared for the prosecution, and the defendant, Mrs. Fox, was represented by Mr. Peppercorn.

Case for the Prosecution

Mr. Roome stated that Mrs. Fox was summoned for having sold a packet of "Supreme" table salt to which a false trade description was applied, the description, printed on the carton containing the salt, being that of "All-British manufacture." Packets of the salt were purchased at the shop of Mrs. Rosenberg, of Hamburg Street, Whitechapel, and sent to the Salt Union, Ltd., at Winsford for analysis. They were there found to contain salt which was not of British manufacture at all. The evidence would show that the salt, already made up in packets, was obtained by Mrs. Rosenberg from the defendant Mrs. Fox.

British salt, proceeded counsel, was exclusively made from evaporated brine, substantially pure sodium chloride, and was in great demand by members of the Jewish faith for Passover ceremonials, because it was essential in the Jewish faith that all ingredients for food for the Passover services should be absolutely clean and entirely untouched by hand. Such was the importance attached to this point that every year a Rabbi attended at the Salt Union works at Winsford for the purpose of seeing the salt manufactured and, being satisfied, issuing a certificate that all salt manufactured there was untouched by hand, clean and pure, and therefore fit for Passover or Kosher purposes. The words "British Manufacture" on any carton of salt indicated that it was fit for those purposes, and in this prosecution it was important to bear in mind that the cartons of salt complained of not only bore the words "All-British Manufacture," but also, in the Jewish language, the words "clean for Kosher purposes."

German salt, which these cartons contained, was a mineral rock salt, the cheaper varieties of which were a by-product of potash mines, and potash being the main ingredient of chemical manures, it might contain deleterious matter and might even be dangerous to health in the cheaper varieties. The imported German salt was about the lowest quality that could be obtained. In the view of the prosecution, this being a very close imitation of British brine salt, it was a very grave fraud practised on the members of the Jewish community who, for the purposes of their Passover ceremonials, desired to obtain something which was really of British manufacture. He was instructed that German rock salt was not used even in Germany for cookery, and the famous sausages were made savoury with boiled salt prepared in a very similar manner to English salt.

Expert Witnesses

Witnesses were called to prove the purchase of the cartons of salt in the manner described, and Mrs. Rosenberg, in evidence, stated that the cartons complained of and produced in Court came from her shop and were purchased by her in the way of business from the defendant Mrs. Fox.

Mr. G. W. Malcolm, managing director in charge of the works of the Salt Union, Ltd., at Winsford, who made a microscopical examination of the salt samples, stated it was certainly not British salt, which was composed of evaporated brine. In cross-examination Mr. Malcolm said the salt complained of contained not a crystal of English manufacture. It was made from rock crystals and therefore was not British.

Mr. G. S. McKee, chemist with the Salt Union, Ltd., at Winsford, proved the analysis of the salt contained in the cartons, and pointed out that it contained insoluble calcium sulphate, which proved it to be salt of foreign origin.

A Plea of Innocence

For the defence, Miss Mary Fox, daughter of the defendant Mrs. Fox, who manages her mother's business, stated that the salt in these cartons was made from bar salt which, she said, was mostly purchased from English firms. Some time ago a traveller sold her some coarser salt, and as it proved unsaleable as it was, it was mixed with the other salt and put into packets, some of which went to Mrs. Rosenberg. The witness named a British firm from whom she thought the salt was purchased, and who had since informed her that it was foreign salt. Until then she was not aware that it was foreign, and that was why it was put into "All-British" packets. In cross-examination the witness said the cartons were obtained from a carton manufacturer with "All-British Manufacture" already printed on. They had always been printed in that way. There were no special precautions taken to see that it was Kosher salt. She maintained that it would have sold just as readily had not "All-British" been printed on the packet.

The Magistrate: You know Jewish people would not buy it for Kosher purposes if it was touched by hand?—Yes, that is so.

The defendant, Mrs. Goldstein, who pleaded guilty, said she purchased a supply of packet salt from Mrs. Fox, whom she asked for "Passover salt."

£10 and Costs

The Magistrate said he was of the opinion that the defendants were not quite such innocent folk as had been made out. He could not accept that suggestion for the reason that care and trouble had been taken to put the mark "All-British Manufacture, for Kosher purposes" on the carton, and those

concerned were enabled to sell it at least a halfpenny cheaper than ordinary salt. It appeared to him that Miss Fox thought she had found a way whereby she could sell a commodity which would be unknown, or, at any rate, not under suspicion, to the Jewish community, and make money on it, without having to meet the competition of other people's salt, and he was afraid she did it on purpose. Evidently she had spread a considerable amount of the commodity around the neighbourhood. He fined Mrs. Fox £10 and £5 costs. Mrs. Goldstein he discharged under the Probation of Offenders' Act, although expressing the view that she knew it was spurious stuff.

Society of Public Analysts

An ordinary meeting of the Society of Public Analysts was held in the Chemical Society's Rooms, Burlington House, London, on Wednesday, December 5, the president, Mr. Edward Hinks, being in the chair. Certificates were read for the first time in favour of W. B. Adam, M.A., A.I.C., A. L. Bacharach, B.A., F.I.C., A. Dargie, B.Sc., A.I.C., and W. J. Itayim.

Certificates were read for the second time in favour of E. H. Bunce, A.I.C., F. O'Brien, M.Sc., F.I.C., W. M. Seaber, B.Sc., F.I.C., and J. G. Sherratt, B.Sc.F.I.C. The following were elected members of the Society:—C. W. Bayley, H. Brindle, B.Sc., A.I.C., W. G. Burgess, G. L. Clothier, H. I. Downes, M.Sc., A.I.C., A. Greenhill, M.Sc., A.R.C.Sc., A.I.C., D. R. Hayward, B.Sc., B. L. Khuller, M.Sc., A.I.C., J. D. Kidd, B.A., M.Sc., A.I.C., H. Drake Law, D.Sc., F.I.C., and S. J. Saint, B.Sc., A.I.C.

Boron Compounds

"The Occurrence and Determination of Boron Compounds in Vegetable Products" was discussed by Mr. A. S. Dodd. Boron compounds were found in a large number of dried fruits, and determined by a modification of Thomson's method, the results being confirmed colorimetrically. The amount of boron compounds (expressed as boric acid) found in dried raisins and currants ranged from 110 to 260 parts per million, and in miscellaneous dried fruits from 40 parts per million in prunes to 300 parts per million in apricots and peaches. In fresh fruits the quantities varied from 31 to 62 parts per million, corresponding to 280 to 550 parts per million on the dry substance.

Chemical Tests for Drunkenness

Messrs. J. Evans and A. O. Jones read a paper on "Chemical Tests for Drunkenness: The Determination of Small Quantities of Alcohol in Urine." The method described consisted essentially in evaporating the urine in a current of air, and conducting the mixture of air and alcohol vapour into a strongly acid standard solution of potassium dichromate. The alcohol was oxidised to acetic acid, and the unreduced dichromate was determined by adding potassium iodide and titrating the liberated iodine with standard thiosulphate solution. An ingenious apparatus designed for the purpose by Dr. H. W. Southgate was described.

An outline was given of the experimental results obtained by Dr. Southgate, upon which the physiological interpretation of the amount of alcohol found in urine was based, together with an account of determinations made by the authors upon samples of urine from subjects who had consumed known amounts of alcoholic drinks. The medico-legal application of the method was discussed.

Analysis of Acetone and Alcohol Mixtures

A paper on "The Analysis of Mixtures containing Acetone, Ethyl Alcohol and Iso-propyl Alcohol" was read by Messrs. C. A. Adams and J. R. Nicholls. Tables were made of the specific gravities and refractometer readings of aqueous mixtures of acetone and the lower alcohols, and these tables could be used for calculating the proportion of three of these ingredients, provided that one of the three could be determined by an independent method. A colorimetric method of detecting and determining acetone was based on the formation of indigo when sodium hydroxide was added to a mixture of o-nitrobenzaldehyde and acetone, and this method could also be used for isopropyl alcohol after oxidation to acetone, whilst ethyl alcohol in the mixture could be determined by oxidation to acetic acid, which was then distilled and titrated.

Physical Analysis of Mixtures

"The Specific Gravities and Immersion Refractometer Readings of Dilute Mixtures of Acetone and Water" was discussed by J. R. Nicholls. Pure acetone was prepared from the commercial product by oxidising impurities, distilling, drying and distillate, and refractionating it by distillation until constant in weight. It was also prepared in a similar way from the sodium iodide compound. Mixtures containing up to 10 per cent. of these pure acetones with water were made and their specific gravities and refractometer readings determined. The results were given in tables and in the form of a graph.

The Wijs Method

Mr. J. J. Wijs dealt with "The Wijs Iodine Method as the Standard for Iodine Absorption." The author's method, which was adopted as the standard for iodine absorption of oils and fats at the International Congress of Pure and Applied Chemistry, has been adversely criticised on the grounds that substitution as well as addition occurred, and that theoretical values were not obtained with certain fatty acids. The author showed that the first criticism was based on erroneous data, and that the second was due to the Wijs reagent used having been prepared by an incorrect formula.

Chemical Matters in Parliament

Dead Sea Salts Concession

Major Glyn (House of Commons, December 10) asked the Secretary of State for the Colonies whether he was yet in a position to make any statement in regard to the granting of a concession by the Palestine Government for the right to extract chemical salts from the Dead Sea; what was the reason for the delay in granting this concession; and whether the work would be entrusted to a British undertaking, the rights and royalties being reserved for the benefit of Palestine?

Mr. Amery, in a written reply, stated that he was awaiting a reply from the Trans-Jordan Government on points of detail which they recently raised in connection with the draft concession. Some delay was inevitable when points of detail had to be discussed with two other Governments, but he hoped that a final decision would be taken shortly. As regards the last part of the question, the position was that it had been decided in principle to grant the concession to Major Tulloch and Mr. Novomeysky, subject to terms satisfactory to the two Governments concerned being agreed upon.

Military Use of Poison Gas

Replying to Mr. Thurtle (House of Commons, December 11), Sir L. Worthington-Evans stated that research and experiment relating to defence against poison gas conducted by his Department was directed to methods and appliances for individual and collective protection of, and towards the treatment of, gas casualties.

Steel Plate Chemical Plant

A new catalogue dealing with high grade steel plate work has been received from Frederick Braby and Co., Ltd., the tank makers, steel plate work and contractors, of Glasgow. The firm has ten factories in various parts of the country and claims to be able to make anything from a pail to a steel barge or tanks for holding 500,000 gallons of oil. They undertake the manufacture and erection of all kinds of heavy tanks and cisterns for chemical works, hoppers and cyclones for coal, grain, sugar and dust extraction, and also make a speciality of the manufacture and erection of steel chimneys.

Appointments Vacant

Junior Lecturer in Metallurgy in the University of the Witwatersrand, Johannesburg, South Africa. Details will be found in our advertisement columns, p. xvii.

Principal of the Technological Institute, Cawnpore. Candidates must be chemists of eminence.—The Secretary to the High Commissioner for India, General Department, 42, Grosvenor Gardens, London, S.W.1. January 31.

Officer-in-Charge of the Wood Preservation Section of the Forest Research Institute, Dehra Dun.—The Secretary to the High Commissioner for India, General Department, 42, Grosvenor Gardens, London, S.W.1. January 29.

From Week to Week

SIR ERNEST RUTHERFORD has been elected an honorary member of the Vienna Academy of Sciences.

THE CHEMICAL CATALOG CO., INC., 419, Fourth Avenue, New York, announce the election of Mr. F. M. Turner, Junr., as president.

RICH DEPOSITS OF RADIOACTIVE ORES are stated to have been discovered in Australia at Radium Hill, Olary, near Broken Hill, and at Mount Painter in the Northern Flinders range.

THOMPSON BROTHERS (BILSTON), LTD., have received a Government contract for a new type of mobile fuel tank, which was tried out in the recent R.A.F. pageant and the Army manœuvres.

MR. T. E. SYMES, M.Sc., who recently left University College, Exeter, where he was engaged in research on the electro-deposition of metals, has taken up a post with Imperial Chemical Industries, Ltd.

RESOLUTIONS approving the amalgamation with Turner and Newall, Ltd., were passed at an extraordinary general meeting of Bell's United Asbestos Co., Ltd., in London, on Thursday, December 6.

BRITISH CERAMIC manufacturers will visit America from April 29 to May 17, 1929, and will be the guests of American manufacturers. Their itinerary has been planned by Mr. M. C. Booze, president of the American Ceramic Society.

PROFESSOR FRITZ HABER, the eminent German physical chemist reached his sixtieth birthday on Sunday, December 9. For the last few years his health has been in a somewhat disturbed state, and he is at present on holiday in Egypt.

B. AND L. POWDERED FUEL, LTD., announce that Engineer-Captain J. C. Brand, R.A.N., Official Naval Representative in England of the Commonwealth Government of Australia, has sent in his papers, and will join the company as managing director on January 1, 1929.

THE NOBEL CHEMISTRY PRIZES for 1927 and 1928, the award of which was announced last week, were presented to the recipients Professors Wieland and Windaus, at Stockholm on Monday. In addition to the Prize (amounting in each case to about £8,600), a diploma and a gold medal were presented.

THE I.G. FARBENINDUSTRIE has sold to a consortium of Berlin banks Rm.10,000,000 of ordinary capital, with a short-term option on a further Rm.20,000,000, the sale price being 145 per cent. In financial circles an increase in the dividend of the I.G. Farbenindustrie from 12 to about 14 per cent. is anticipated.

THE ANNUAL DINNER of the Imperial College of Science and Technology, South Kensington, held on Monday, coincided with the twenty-first anniversary of the granting of the charter. Lord Buckmaster presided, and the other speakers included Sir John Gilbert, Lord Harris, Sir Frank Heath, Sir William Pope, and Mr. J. Combes.

THE SOUTHERN RAILWAY CO. has put into trial service a passenger coach covered with strips of fabric supplied by Rexine, Ltd., which take the place of paint and varnish. It is stated that it is yet a little early to give any report on the wearing qualities of the material, but up to the present it is retaining its colour well, and is easily cleaned with soap and water.

RECENT WILLS INCLUDE: Mr. H. Leaton Edwards, chemist to Lever Bros., Ltd., £4,438 (net personalty £3,207).—Mr. M. Salamon, senior partner in Salamon and Seeber, consulting chemists, Mark Lane, £25,466 (net personalty £21,585).—Mr. Thomas Kirk, director of the Carlton Ironworks, Middlesbrough, until taken over by Pease and Partners, Ltd., £42,891 (net personalty £40,097).—Mr. A. J. Cameron, a director of the Distillers' Co., Ltd., left personal property of the value of £211,886, of which his holding in the Distillers Co. exceeds £128,000.

SPEAKING at a session of the League of Nations Union Conference on "Armaments and the Kellogg Pact" in London on Thursday, December 6, Professor Gilbert Murray said that the only safeguard against the possibilities of chemical warfare was to internationalise the great chemical industries of the world. It would mean a very thorough organisation, and it would be necessary to have Englishmen, Frenchmen, and Italians on the executive Board of the German industry, so that it could never be used as an engine of war. Equally, of course, the same precautions would have to be taken with the English, French and Italian industries.

AN AGREEMENT, it is announced by the directors of Continuous Coal Carbonisation, has been made between the company and one of an important group of collieries for the provision of a suitable site in the district of the Tyne (Newcastle-on-Tyne) with a view to the erection thereon of a plant to carbonise 5,000 tons of coal per day. The colliery undertakes to supply coal to such plant on an agreed cost plus profit basis. The necessary organising and financial arrangements for the erection of the plant and the marketing of the products are to be provided for by the formation of a new company, in which Continuous Coal Carbonisation will have a substantial interest.

THE HONORARY DEGREE of Doctor of Laws was conferred on Lord Birkenhead on Wednesday at Trinity College, Dublin.

THE CHEMICAL SOCIETY'S LIBRARY will be closed for the Christmas holidays at 1 p.m. on Saturday, December 22, and will reopen at 10 a.m. on Friday, December 28.

MR. E. H. SHACKELL has been appointed to the seat on the board of the Electrolytic Zinc Co. of Australasia, Ltd., rendered vacant by the death of Mr. G. Swinburne. Mr. Shackell will be managing director.

GIFTS OF $10,000 each have been made to the University of Akron by Mr. P. W. Litchfield, president of the Goodyear Tyre and Rubber Co., and by Mr. F. H. Mason, vice-president of the B. F. Goodrich Co.

THE INSTITUTE OF METALS has found it necessary to alter the date of the twenty-first annual general meeting and "Coming-of-Age" celebrations of the Institute from the date originally fixed, March 6 and 7, to March 13 and 14, 1929.

A SWEDISH NITROGEN FIXATION PLANT located at Ljungaverk, a small village about 70 miles from Sundsvall, employs the Fauser process, and is producing about 4,000 tons of ammonium sulphate annually. An increase to 8,000 or 9,000 tons is contemplated.

A PROCESS for the chromium plating of aluminium has been worked out by the National Chromium Corporation, of 200, Varick Street, New York, U.S.A. The aluminium is first plated with nickel and then with chromium. The process is said to be applicable to all the usual aluminium alloys.

THE WELLCOME FOUNDATION is engaged in the conversion into large-scale production of the laboratory work which has been carried out by the Distemper Research Council on the production of an anti-distemper vaccine for dogs. It is hoped, in due course, to issue the vaccine through Burroughs, Wellcome and Co.

TANTALUM TETRABROMIDE (states Mr. K. R. Krishnaswami, of University College, London, in a letter to *Nature*) may be readily prepared in an atmosphere of nitrogen or argon by distilling bromine on to powdered tantalum heated to 260°-300° C. Heating the metal to red heat, as has been done by former workers, is unnecessary.

IN A TEST on Acetex safety glass at the National Physics Laboratory, a steel ball, 2¼ in. in diameter and weighing 1.67 lb., was dropped from a height of 10 ft. on the centre of the glass. The ball rebounded from the sheet without passing through. Powdering occurred at the point of impact, but otherwise the glass remained in one piece.

DR. T. R. DUGGAN, for many years honorary secretary of the Chemists' Club in New York, who has now returned to England and taken up his residence in London, has undertaken to give an address on "The Status of Chemists in the United States before and after the War" at a meeting of the London Section of the Institute of Chemistry on Wednesday next.

LARGE SCALE MANUFACTURE in France of fertilisers from grape residues is being investigated, states the U.S. Department of Commerce. Fertilisers can be produced from the residues existing after alcohol, tartaric acid, and seed oil are obtained from the fruit. The residues are of three types: fine vegetable mould emanating from the separation of the pips; pulp constituted in the same manner as the vegetable mould, but not so fine; and pips from which the oil has been extracted. It is suggested that the material could be mixed with superphosphate and potash to form a high-grade mixture.

THE BRISTOL SECTION of the Society of Chemical Industry had on view at a recent meeting at the University a handsome silver vase which is to be presented to Mr. M. W. Jones, chairman in 1923-24 and hon. treasurer from 1921 until a few weeks ago. Mr. Jones has left Bristol for Glasgow. The meeting was a joint gathering of the Bristol and the Fuel Sections of the Society, to which a paper on "Refractories in the Gas Industry," by Dr. E. W. Smith and Mr. H. M. Spiers, of the Woodall-Duckham Companies, London, was read by Mr. Spiers. In the absence of the chairman, Mr. J. Bernard, and the vice-chairman, Professor Fawcett, Mr. R. Robertson presided.

ARTIFICIAL SILK NEWS.—An Amsterdam message states that the Dutch Enka Co. has formed two subsidiaries, styled "Fluida" and "Plumba," with working capitals of 1,515,000 florins and 515,000 florins respectively, to manufacture acetate silk.—The Yorkshire Artificial Silk Co., Ltd., will commence production in about six weeks' time, and is expected to reach full output by the end of March.—The United Glanzstoff Factories Co. has confirmed the report that, together with Courtaulds, it has acquired the Lilienfeld patents, the Nuera Co. having consented to the production of such yarn. The output of the yarn will probably be concentrated in one place.—From 15 to 20 artificial silk factories are to be erected in Russia.—British Bemberg, Ltd., proposes to erect a factory at Doncaster, in which 1,500 people will be employed.—The proposed amalgamation of British Visada and British Breda was approved on Wednesday. Sir Edwin Stockton is to join the board of the British Breda Co.

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GENERAL.—Adsorption of vapour on a quartz or a glass wall. A. Smits. *J. Chem. Soc.*, November, pp. 2952–2954.

The formation of iron carbonyl on storage of commercial hydrogen under pressure. J. G. King and J. A. Sutcliffe. *J.S.C.I.*, November 30, p. 356T.

INORGANIC.—The reaction of hydrogen chloride with the dioxides of selenium and tellurium between 0° and 170° C. T. W. Parker and P. L. Robinson. *J. Chem. Soc.*, November, pp. 2853–2857.

ORGANIC.—Some substitution products of azobenzene. J. Burns, H. McCombie, and H. A. Scarborough. *J. Chem. Soc.*, November, pp. 2928–2936.

Heterocyclic compounds containing arsenic.—II. Derivatives of 1:4-benz*iso*oxazine. G. Newbery, M.A. Phillips, and R. W. E. Stickings. *J. Chem. Soc.*, November, pp. 3051–3066.—III. Some derivatives of 4-amino-3-hydroxyphenyl-arsinic acid. J. E. Balaban. *Ibid.*, pp. 3066–3073.

PAINTS.—Pigment and vehicle. V. G. Jolly. *J. Oil and Colour Chem. Assoc.*, November, pp. 361–375.

PETROLEUM.—The analysis of cracked spirits. The determination of aromatic, olefine, naphthene and paraffin hydrocarbons. F. H. Garner. *J. Inst. Petroleum Tech.*, October, pp. 695–732.

United States

APPARATUS.—An electric steam-bath. G. B. Cook. *J. Chem. Educatn.*, November, pp. 1,447, 1,463.

COLOUR LAKES.—The physical chemistry of colour lake formation.—IV. Red Congo Acid and Congo Red Lakes. H. B. Weiser and R. S. Radcliffe. *J. Phys. Chem.*, December, pp. 1875–1885. Aqueous solutions of Congo Red contain a red colloidal anion. Replacing the sodium in Congo Red with hydrogen gives a blue colloidal acid. The blue acid is very slightly soluble in water, yielding a red colloidal anion. The positively charged hydrous lake mordants, such as alumina, absorb the blue colloidal acid giving blue lakes. The blue lake is an adsorption complex of the blue acid and the hydrous oxide.

GENERAL.—The constant-boiling mixture of hydrogen fluoride and water. C. W. Muehlberger. *J. Phys. Chem.*, December, pp. 1888–1889. The constant boiling mixture is 38.18 per cent. HF at a pressure of 735 mm. of mercury. The boiling point is 110.8° C. at 732 mm. pressure, and the density is 1.138 at 20° C.

German

ANALYSIS.—The determination of zinc as pyrophosphate in the presence of much sodium chloride. L. Dede. *Berichte*, December 5, pp. 2463–2465.

APPARATUS.—A simple microelectrodialysis apparatus. E. Baer. *Kolloid-Zeitschrift*, November, pp. 176–178.

CATALYSIS.—The efficiency of various contact substances in the sulphuric acid contact process.—II. B. Neumann and E. Goebel. *Zeitschrift Elektrochem.*, November, pp. 734–740. Discusses the behaviour as catalysts of pure ferric oxide; ferric oxide and bismuth oxide; ferric oxide and potassium oxide; ferric oxide-strontium oxide; ferric oxide-stannic oxide; chromic oxide-stannic oxide; stannic oxide; and titanium dioxide.

CEMENT.—The hardening of cement. H. Gessner. *Kolloid-Zeitschrift*, November, pp. 207–216.

ELECTROCHEMISTRY.—The electrochemical production of hydrogen peroxide. L. Loewenstein. *Zeitschrift Elektrochem.*, November, pp. 784–786.

GENERAL.—Methane syntheses from carbon monoxide-hydrogen mixtures with nickel. H. A. Bahr and T. Bahr. *Berichte*, December 5, pp. 2465–2469.

Experiments on the catalytic production of copper sulphate. E. Abel and O. Redlich. *Zeitschrift Elektrochem.*, November, pp. 740–744. An investigation on the reaction between copper and nitrosylsulphuric acid. The process is retarded by a layer of copper nitrosylsulphate, the formation of which is prevented by the addition of nitric acid or nitrogen peroxide.

Sulphuryl chloride and its preparation.—I and II. E. Terlinck. *Chemiker-Zeitung*, November 21, pp. 901-903; December 5, pp. 944–946.

Tantalum as a material for chemical apparatus. F. Heinrich and F. Petzold. *Chemische Fabrik*, December 5, pp. 689–691.

The application of fireclay, stoneware, and porcelain as materials in the chemical industry. F. Singer. *Chemische Fabrik*, November 28, pp. 680–682; December 5, pp. 691–692.

Greases for high vacua. F. Heinrich and F. Petzold. *Chemische Fabrik*, December 5, pp. 692–693.

The technique and economics of mechanical methods of dispersion. F. Hebler. *Kolloid-Zeitschrift*, November, pp. 225–227.

INORGANIC.—New fluorides, especially chlorine fluoride. O. Ruff. *Zeitschrift angewandte Chem.*, December 8, pp. 1289–1292. Describes nitrogen trifluoride (NF_3) and chlorine fluoride (ClF).

ORGANIC.—Indoquinonanthrene (1 : 2 : 5 : 6–diphthalyl-anthraquinone. R. Scholl and H. K. Meyer. *Berichte*, December 5, pp. 2550–2555. This substance was obtained by the oxidation of *iso*violanthrone with chromium trioxide in boiling acetic acid solution.

PATENTS, ETC.—The significance of patents and trade-marks in chemistry. W. Fischer. *Zeitschrift angewandte Chem.*, December 8, pp. 1299–1301.

RUBBER.—Isoprene and rubber. H. Standinger, M. Asano, H. F. Bondy and R. Signer. *Berichte*, December 5, pp. 2575–2595.

Miscellaneous

ANALYSIS.—A volumetric method of determination of phosphoric acid in the phosphates of the alkali and alkaline earth metals, of iron, and of aluminium. Drachoussof and Douchy. *Chimie et Industrie*, November, pp. 823–828 (in French).

APPARATUS.—Automatic apparatus for the measurement of hydrogen ion concentration. A. Lassieur. *Chimie et Industrie*, November, pp. 819–822 (in French).

COAL.—Relations between coking property and moisture of coal. S. Iki. *J. Soc. Chem. Ind. Japan* (supplemental binding), November, p. 277 B (in English).

GENERAL.—The utilisation of marine animal oils in engines. H. Marcelet. *Chimie et Industrie*, November, pp. 829–836 (in French). It is suggested that marine animal oils could replace the fuels hitherto employed in Diesel and semi-Diesel engines.

On the condensation products of phenols and aldehydes.—XIII. Decomposition products of $C_{14}H_{18}O_2N$ (iii). T. Shono. *J. Soc. Chem. Ind. Japan* (supplemental binding), November, pp. 252–254 B (in English).

OILS.—The bromides of linolenic acid. W. Kimura. *J. Soc. Chem. Ind. Japan* (supplemental binding), November, pp. 251–252 B (in German).

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A study of the alkali-fusion of anthracenemonosulphonic acids. P. Ferro and A. Conzetti. *Helvetica Chimica Acta*, Volume XI, Part 6, pp. 1152–1159 (in French).

Contribution to the knowledge of the carbon ring.—XIII. On the oxidation of the 13- to 17-membered monocyclic ketones with Caro's acid to the 14- to 18-membered lactones. L. Ruzicka and M. Stoll. *Helvetica Chimica Acta*, Volume XI, Part 6, pp. 1159–1173 (in German).—XIV. The ketones of the 19-, 21- and 29-membered rings. L. Ruzicka, M. Stoll and H. Schinz. *Ibid.*, pp. 1174–1180.

Electrochemical oxidation of α-methylnaphthalene. F. Fichter and S. Herzbein. *Helvetica Chimica Acta*, Volume XI, Part 6, pp. 1264–1267 (in German). Electrochemical oxidation in acetone solution leads to the formation of dimethyl-1 : 1′-dinaphthyl-4 : 4′ (m.p. 147° C.).

Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Complete Specifications

300,142. METHYL ALCOHOL, MANUFACTURE OF. British Celanese, Ltd., 8, Waterloo Place, London, S.W.1. W. Bader and S. J. Green, of British Celanese, Ltd., Spondon, near Derby. Application date, May 2, 1927.

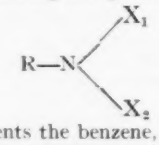
When methyl alcohol is prepared from hydrogen and carbon oxides, the catalyst employed is usually zinc oxide containing a small proportion of a promoter such as chromium oxide or copper. It is now found that the activity of the zinc oxide depends much more on the method of its preparation than on the presence of the promoter. In this invention, zinc carbonate is precipitated in a highly colloidal and gelatinous form in very dilute solution in the presence of protective colloids such as starch, pectin, saponin, hydrated silica, etc. The precipitate is washed by decantation to remove completely any electrolyte, and the zinc carbonate gel is dried by heating under vacuum of reduced pressure. The zinc carbonate is converted into zinc oxide by heating it to temperatures not above those used in the catalytic production of methyl alcohol, preferably to 250°—400° C. This catalyst is very active but the presence of a promoter has little effect.

300,233. IRON COMPOUND FROM SOLUTIONS OF IRON, PROCESS FOR PREPARING AND ITS CONVERSION INTO IRON OXIDE. O. S. Neill, Craig-y-Don, Llandudno. Application date, August 9, 1927.

A solution containing an iron compound such as waste pickle liquor is sprayed by a rotating device into a drying medium which causes the globules to set into hollow shells by removal of the water. Alternatively, the solution may be sprayed by a nozzle on to a rotating disc which imparts a whirling motion to the particles. The drying medium may be heated air or waste furnace gases, introduced tangentially into the chamber containing the atomiser. The product is very light and porous, and is nearly white in colour. It may be converted in a short time by calcination into the oxide. The latter may be crushed and/or treated with water to obtain iron oxides having different degrees of colloidal character.

300,285. HYDROGENATED AROMATIC AMINO COMPOUNDS, MANUFACTURE OF. K. and K. S. Carpmael, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application dates, May 4, and November 22, 1927.

These compounds are obtained by treating an aromatic amino compound having the general formula



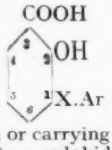
in which R represents the benzene, or a substituted benzene, residue, X_1 represents hydrogen alkyl, aryl, or arylkyl, and X_2 represents alkyl or aralkyl. Alternatively, R may represent a substituted naphthalene residue, in which case X_1 represents hydrogen and X_2 represents acyl. These compounds are treated in the liquid phase with hydrogen under pressure and in the presence of a hydrogenation catalyst such as nickel, cobalt or copper. Examples are given of the treatment of ethyl-aniline, dimethylaniline, 2-acetylamino-naphthalene-3-carboxylic ethyl-ester, 1-acetylamino-2-naphthol-ethyl-ether, and 1-acetylamino-7-naphthol-methyl-ether.

300,287. VULCANIZING RUBBER, METHOD OF. E. C. R. Marks, London. From The Rubber Service Laboratories Service Co., 335, Main Street, Akron, Ohio, U.S.A. Application date, May 9, 1927.

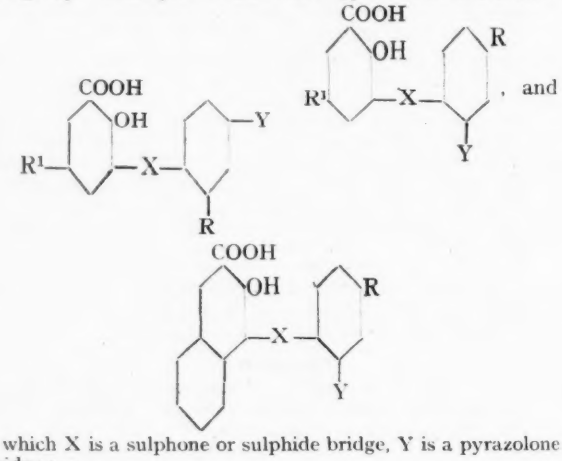
It is known that the vulcanisation of rubber is accelerated by means of simple condensation products of aldehydes and amines, *i.e.*, Schiff's bases, and it is now found that these accelerators are improved by treatment with an acid followed by neutralisation and treatment with an aldehyde or carbon disulphide. In the case of the base produced by the interaction of two molecules of aniline with one molecule of acetaldehyde, *i.e.*, ethylidine-dianiline, only 0·2 per cent. of 30 per cent. hydrochloric acid is required to modify the compound, and the temperature is kept below 40° C. The product may then be neutralised with caustic soda or calcium carbonate, and then treated with a further proportion of acetaldehyde. Vulcanisation is complete with this accelerator in 45 minutes, and a number of examples of rubber mixtures are given.

300,321. NEW PYRAZOLONES AND DYES THEREFROM. Imperial Chemical Industries, Ltd., Broadway Buildings, Westminster, London, S.W.1, and M. Mendoza, of Crumpsall Vale Chemical Works, Blackley, Manchester. Application date, August 19, 1927.

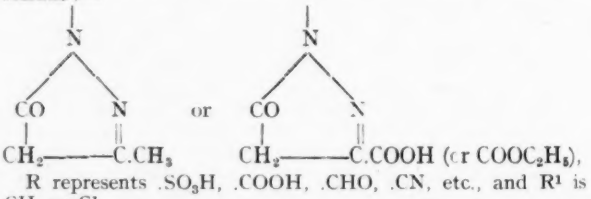
These pyrazolones are derived from diaryl sulphides and sulphones of the type.



substituted in position 5 or carrying a benzo group in positions 5, 6, where X represents a sulphide or sulphone bridge, and Ar represents an aromatic residue carrying an aromatic group with or without other substituent groups. The amino group in Ar is converted by diazotisation, reduction to the hydrazino group, and condensation with a β-ketonic ester into a pyrazolone group. Examples of these new pyrazolones include:—



in which X is a sulphone or sulphide bridge, Y is a pyrazolone residue:—



R represents $.SO_3H$, .COOH, .CHO, .CN, etc., and R^1 is CH_3 or Cl.

Examples are given of the manufacture of azo dyes by coupling these pyrazolones with diazo components including diazoazo compounds and tetrazo compounds.

300,329. MIXED FERTILISER CONTAINING UREA AND PHOSPHATE, MANUFACTURE OF. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, August 24, 1927.

Mixed fertilisers containing urea and super-phosphate are usually somewhat unstable, but this objection can be avoided by mixing urea with aluminium and/or iron phosphate; the mixture remains dry for an unlimited time. Use may be made of the iron and aluminium phosphate obtained on neutralising with ammonia the phosphoric acid obtained on dissolving raw phosphate for the recovery of ammonium

phosphate. Other fertilisers such as potassium salts may be added without affecting the storage qualities.

300,348. Solid Calcium Cyanide and Double Compounds with Ammonia, Manufacture of. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application dates, September 19, 1927, and May 2, 1928.

Pure anhydrous calcium cyanide has not been obtainable from initial materials containing water, owing to the decomposition of calcium cyanide in presence of water. In this invention solid calcium cyanide is obtained by decomposing the compound of calcium cyanide and ammonia. This compound is obtained by treating calcium oxide, hydroxide, or water-soluble calcium salts in the presence of water or organic solvents with hydrocyanic acid and ammonia. Suitable solvents include methyl and ethyl alcohol, ether, benzene or pyridine. The double compound calcium cyanide diammoniate is comparatively stable in the presence of water. The double compound when prepared usually contains some water which cannot be removed by centrifuging and pressing or drying without risk of decomposition. The water may be removed at a low temperature by treating with a current of dry ammonia or washing with hygroscopic organic liquids. The decomposition of the double compound of calcium cyanide and ammonia is effected by heating under reduced pressure. On a large scale it is necessary to treat the double compound in the form of coarse crystals, the production of which is described in an example.

300,369. Hydrocyanic Acid, Process for the Production of. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, October 13, 1927.

This invention relates to catalysts for the production of hydrocyanic acid from ammonia and carbon monoxide. The catalysts consist of carbides of iron, cobalt and nickel, and are improved by the addition of molybdenum, tungsten, manganese, cerium, titanium or copper, either free or combined. The carbides are obtained by melting metal with finely-divided carbon. An example is given of the production of hydrocyanic acid with a catalyst of iron carbide and molybdenum.

Note.—Abstracts of the following specifications which are now accepted, appeared in The Chemical Age when they became open to inspection under the International Convention :—274,130 (Soc. of Chemical Industry in Basle), relating to dyestuffs, see Vol. XVII, p. 261 ; 275,663 (I.G. Farbenindustrie Akt.-Ges.), relating to destructive hydrogenation of carbonaceous materials, see Vol. XVII, p. 352 ; 276,972 (W. Büsching), relating to denitration of waste sulphuric acid, see Vol. XVII, p. 419 ; 271,853 (Copper Deoxidation Corporation), relating to treatment of copper, see Vol. XVII, p. 15 (Metallurgical Section) ; 273,735 (F. Uhde), relating to synthetic ammonia, see Vol. XVII, p. 242 ; 279,421 (N. Caro and A. R. Frank), relating to alkaline nitrogen fertiliser, see Vol. XVII, p. 579 ; 279,811-2 (N. Caro and A. R. Frank), relating to cyanimides of calcium and magnesium, see Vol. XVII, p. 623 ; 281,298 (I.G. Farbenindustrie Akt.-Ges.), relating to aromatic hydrocarbons, see Vol. XVIII, p. 104 ; 283,112 (Soc. Anon. des Distilleries des Deux-Sevres), relating to acetal, see Vol. XVIII, p. 225 ; 284,700 (A. Schmid and J. Meissner), relating to nitration of glycerine etc., see Vol. XVIII, p. 347 ; 290,992 (Distilleries des Deux-Sevres), relating to anhydrous fatty acids, see Vol. XIX, p. 85.

International Specifications not yet Accepted

298,461. Chemical Processes. Siemens and Halske Akt.-Ges., Siemensstadt, Berlin. International Convention date, October 8, 1927.

Reactions between liquids and powdered substances are effected by enclosing the powder in a heavy perforated container. This may be applied to the oxidation of sodium stannite to stannate with sodium peroxide prior to electrolysis, and the oxidation of zinc lyes before electrolysis.

298,493. Dyes and Intermediates. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, October 8, 1927.

An alkoxy-aryl-thioglycollic acid of the benzene or naphthalene series is converted into the acid halide, and then treated with aluminium halide preferably in the presence of a solvent, to obtain alkoxy-3-oxythionaphthenes. In examples, 1-methyl-6-chlor-4-methoxybenzene-3-thioglycollic acidis treated with thionyl chloride, and 6-ethoxynaphthalene-2-thioglycollic acid with phosphorus trichloride, and the products treated with aluminium chloride. The 6-ethoxynaphthalene-2-thioglycollic acid is obtained by reducing 6-ethoxynaphthalene-2-sulphochloride to the mercaptan, and condensing with chloracetic acid.

298,494. Dyes. Soc. of Chemical Industry in Basle, Switzerland. International Convention date, October 8, 1927.

A large number of examples are given of the condensation of azo dyestuffs containing metal, with or without other compounds, with cyanuric halides ; the products can be further subjected to coupling with a diazo compound, or diazotisation and further coupling, reduction, condensation, acidylation, alkylation, aralkylation, or arylation.

298,537. Aldehyde-amine Condensation Products. Naugatuck Chemical Co., Elm Street, Naugatuck, Conn., U.S.A. (Assignees of S. M. Cadwell, 561, West 58th Street, New York.) International Convention date, November 1, 1926.

A condensation product of an aliphatic aldehyde having 2—7 carbon atoms in the molecule, and a primary amine is halogenated to obtain a vulcanization accelerator. Examples of the treatment of the condensation product of heptaldehyde and aniline are given.

298,556. Cracking Oils. Electro Metallurgical Co., 30, East 42nd Street, New York. (Assignees of S. M. Norwood, 87, Delaware Avenue, Flushing, N.Y., U.S.A.) International Convention date, October 11, 1927.

Oil-cracking apparatus is made of, or lined with, an iron alloy containing less than 1 per cent. of carbon, and also chromium 15–40%, nickel 2–15%, silicon 0·7–3%, manganese 0·7–3%.

298,600. Propyl and Di-propyl Cresols ; Cresol Propyl Ethers. Rheinische Kampfer-Fabrik Ges., Oberkassel, Düsseldorf, Germany. International Convention date, October 12, 1927.

Propylene and *o*-, *m*, or *p*-cresol are condensed by the action of catalysts so as to attach a propyl or isopropyl group at the nucleus or oxygen atom or both. The catalyst may be alumina, aluminium phosphate, thorium or tungsten oxides. The reacting substances may be in vapour form. Propylene may be replaced by substances yielding it, or by thymol, dipropyl-*m*-cresol, etc. The proportions of the products depend on the conditions of the reaction. A number of examples are given.

298,611 and 298,617. Denaturing Alcohol. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, October 12, 1927.

298,611. Alcohol is denatured by fractions of coal tar pyridines boiling above 120° C. and sparingly soluble in water, or by sparingly soluble homologues of synthetic pyridines.

298,617. This is an addition to 298,611. Alcohol is denatured by methyl sulphocyanide, allyl alcohol or carbinol, diethyl, dimethyl, methyl-ethyl, or diacetyl sulphides, acetonitrile thioacetic ester, thiobutyric ester, or ichthyol oil and products containing them. Such products are the fraction boiling above 10° C. obtained in the preparation of butadiene from 1:3-butylene glycol, crude synthetic methanol, etc. These denaturants are effective even after fractionation of the alcohol or filtration through charcoal.

298,622. Vulcanising Rubber. Goodrich Tire and Rubber Co., 1144, East Market Street, Akron, Ohio, U.S.A. (Assignees of J. Teppema, 29, Mayfield Apartment, Twin Oaks, Akron, Ohio, U.S.A.) International Convention date, October 13, 1927.

A vulcanisation accelerator consists of the reaction product of a hydroxy aromatic aldehyde and an amine.

298,639. Sodium Sulphate and Sulphuric Acid. Vereinigte Glanzstofffabriken Akt.-Ges., 14, Auerschulstrasse, Elberfeld, Germany. International Convention date, October 13, 1927.

The solubility of sodium sulphate in sulphuric acid is a minimum when the solution contains 75–80 per cent. acid, and it is separated by concentration to this point.

LATEST NOTIFICATIONS.

301,486. Method of producing a mixture of calcium nitrate and ammonium nitrate. Kungstdünger-Patent-Verwertungs-Akt.-Ges. December 1, 1927.

301,727. Process for the preparation of compounds of c_1 c-disubstituted barbituric acids and 1-phenyl-2, 3-dimethyl-4-dialkyl-amino-5-pyrazolones. Chemical Works, formerly Sandoz. December 3, 1927.

301,384. Process for the preparation of sodium sulphide or similar chemical substances in the form of bodies of predetermined shape and size. Kali-Chemie Akt.-Ges. November 28, 1927.

301,500. Manufacture of pentasulphide of phosphorus. Dutoit, P. December 1, 1927.

301,423. Process for the manufacture of monoazo dyestuffs and their chromed derivatives. I.G. Farbenindustrie Akt.-Ges. November 29, 1927.

301,430. Process and apparatus for the condensation of vapours I.G. Farbenindustrie Akt.-Ges. November 29, 1927.

301,515. Process for the manufacture of latex-like emulsions and rubber-like masses. I.G. Farbenindustrie Akt.-Ges. December 2, 1927.

301,754. Process for dyeing viscose silk. I.G. Farbenindustrie Akt.-Ges. December 2, 1927.

301,755. Manufacture of acetyl cellulose. I.G. Farbenindustrie Akt.-Ges. December 2, 1927.

Specifications Accepted with Date of Application

275,670. Hydrocarbons and derivatives thereof, Manufacture of—by the destructive hydrogenation of carbonaceous materials. I.G. Farbenindustrie Akt.-Ges. August 9, 1926.

276,692. Monobenzoyldiamino-anthraquinones, Manufacture of. I.G. Farbenindustrie Akt.-Ges. August 30, 1926.

279,884. Higher alkylated guanidine derivatives, Manufacture of. Schering Kahlbaum Akt.-Ges. October 28, 1926.

282,011. Treating rubber latex. L. Mellersh-Jackson (*Naugatuck Chemical Co.*) October 5, 1927.

282,375. Alkyl pyrazolanthrones, Production of. I.G. Farbenindustrie Akt.-Ges. December 14, 1926. Addition to 264,503.

284,678. Electrolytic production of light metals. P. L. Hulin. February 3, 1927.

284,722. Aluminium alloys, Production of. A. Geyer. February 4, 1927.

286,282. Alkaline reacting nitrogenous fertiliser with gradable alkalinity, Production of. N. Caro and A. R. Frank. March 3, 1927.

286,708. Contact sulphuric acid process. Selden Co. March 10, 1927.

287,540. Cellulose esters, Manufacture of. Fabriek van Chemische Producten. March 24, 1927.

293,438. Trimethylamine glycol monoborate, Production of. K. Ludecke. July 8, 1927.

300,519. Zinciferous materials, Reduction of. L. Mellersh-Jackson. (*New Jersey Zinc Co.*) August 8, 1927.

300,800. Dye preparations. Imperial Chemical Industries, Ltd., W. Gibson, A. J. Hailwood, J. B. Payman, and A. Shepherdson. August 29, 1927.

300,940. *o*- and *p*-xylene, Manufacture of. A. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*) August 20, 1927.

300,946. Pseudo-perphosphates, Production of. S. Husain and J. R. Partington. August 20, 1927.

301,000. Alcohols, Production of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) June 18, 1927.

301,099. Iron, nickel, cobalt, or other metals which form carbonyls, Separate production of—from mixtures containing several such metals. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) June 25, 1927.

301,105. Fertilizers, Manufacture of. A. B. Kensington. August 25, 1927.

301,112. Nitroglycerine and the like, Manufacture of. F. E. Smith, A. P. H. Desborough, W. T. Thomson, W. Ledbury, and E. W. Blair. August 26, 1927.

301,119. 1:3-diamino-2-hydroxy-anthraquinone from 4^1-hydroxy-ortho-benzoyl-benzoic acid, Process of making. I. Gubelmann H. J. Weiland, and O. Stallmann. August 29, 1927.

301,130. Oils of high boiling point from the residues of mineral oils, tar oils, and the like, Recovery of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) September 5, 1927.

301,175. Azodyestuffs, Manufacture of. O. Y. Imray. (*I.C. Farbenindustrie Akt.-Ges.*) October 28, 1927.

301,193. Triaryl-methane dyes. British Dyestuffs Corporations, Ltd., F. W. Linch, and E. Rodd. November 17, 1927.

301,197. Vat dyestuffs, Manufacture of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) November 21, 1927. Addition to 289,980.

301,210. Calcium compounds, Treatment of—with sulphuric acid or salts thereof. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) December 5, 1927.

301,232. Nitric and sulphuric acid, Manufacture of and apparatus for. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) January 16, 1928.

293,361. Drying gases for the synthesis of ammonia. Gasverarbeitungsges. July 4, 1927.

295,587. Destructive hydrogenation of carbonaceous materials. I.G. Farbenindustrie Akt.-Ges. August 9, 1926.

296,373. Vat dyestuffs of the anthanthrone series. I.G. Farbenindustrie Akt.-Ges. August 30, 1927.

296,782. Isothiourea ethers, Manufacture of. Schering Kahlbaum Akt.-Ges. September 9, 1927.

301,009. Halogenated hydrocarbon products. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) June 18, 1927.

Applications for Patents

Allgemeine Ges. für Chemische Industrie and Marks, Sir G. C. Evaporating and recovering sulphurous acid from mixture of hydrocarbons, etc. 35,103. November 28.

Accumulatoren-Fabrik Akt.-Ges. Process of obtaining hydroxides. 35,992. December 6. (Germany, January 30.)

Bataafsche Petroleum Maatschappij and Elkington, H. D. Absorbing ethylene, etc. by sulphuric acid, etc. 35,220. November 29.

Carpmael, A. and I.G. Farbenindustrie Akt.-Ges. Manufacture of lubricating-oils. 35,079. November 28.

Carpmael, A. and I.G. Farbenindustrie Akt.-Ges. Manufacture of aqueous solutions. 35,358. November 30.

Carpmael, A. and I.G. Farbenindustrie Akt.-Ges. Manufacture of carbon monoxide. 35,469. December 1.

Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of condensation products of poly-nuclear compounds. 35,053. December 3.

Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of vat dyestuffs. 35,758. December 4.

Carpmael, A., and I.F. Farbenindustrie Akt.-Ges. Manufacture of metal-organic complex salts. 35,759. December 4.

Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of aromatic nitriles. 35,760. December 4.

Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of complex antimony salts. 35,910. December 5.

Carpmael, A., and I.G. Farbenindustrie Akt.Ges. Manufacture of complex metallic salts. 36,047. December 6.

Coley, H. E. Activating carbon, etc. 35,582. December 3.

Coley, H. E. Manufacture of zinc oxide. 35,583. December 3.

Coley, H. E. Apparatus for heating retorts, etc. 35,584. December 3.

Du Pont de Nemours and Co., E. I. and Marks, Sir G. C. Organic intermediate compounds, etc. 36,293. December 8.

Du Pont de Nemours and Co., E. I. Catalytic preparation of oxygenated organic compounds. 35,744. December 4. (United States, June 12, 1926.)

Dyson, G. M., and Renshaw, A. Manufacture of ammonium salt. 35,913. December 5.

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Apparatus for manufacture of sulphates. 35,576. December 3.

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Production of acetaldehyde from acetylene. 35,577. December 3.

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Production of sugars, etc. 35,578. December 3.

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Prevention of mould in rubber. 35,580. December 3.

I.G. Farbenindustrie Akt.-Ges., and Imray, O. Y. Agent for exterminating animal, etc., pests. 36,008. December 6.

I.G Farbenindustrie Akt.-Ges. Purifying crude benzol, etc. 35,579. December 3.

I.G. Farbenindustrie Akt.-Ges. Dyeing viscose silk. 35,056. December 3. (Germany, December 2, 1927.)

I.G. Farbenindustrie Akt.-Ges. Manufacture of acetyl cellulose. 35,057. December 3. (Germany, December 2, 1927.)

I.G. Farbenindustrie Akt.-Ges. Manufacture of waterproof paper, etc. 35,870. December 5. (Germany, December 5, 1927.)

I.G. Farbenindustrie Akt.-Ges. Manufacture of 4-(β-oxyethyl-amino)1-oxybenzene. 35,880. December 5. (Germany, December 5, 1927.)

I.G. Farbenindustrie Akt.-Ges. Manufacture of cellulose esters. 36,009. December 6. (Germany, December 24, 1927.)

I.G. Farbenindustrie Akt.-Ges. Manufacture of material for producing non-transparent coatings. 36,179. December 7. (Germany, December 13, 1927.)

I.G. Farbenindustrie Akt.-Ges. Manufacture of therapeutical compounds. 36,221. December 7. (September 12.)

Imperial Chemical Industries, Ltd. Introducting liquids, etc., into high-pressure vessels. 36,091. December 7.

Imperial Chemical Industries, Ltd. Heating carbonaceous materials 36,238. December 8.

Imperial Chemical Industries, Ltd. Method of hydrogenating coal, etc. 36,274. December 8.

Kali-Chemie Akt.-Ges., and Mond, A. L. Removal of sulphates from clays, etc. 36,266. December 8.

Metallges Akt.-Ges. Production of sulphuric acid 36,006. December 6. (Germany, January 19.)

Schmidt, F. Hardening condensation products. 35,743. December 4. (Germany, August 3.)

Simmons, B. R. Synthetic resin compositions, etc. 35,826. December 5.

Soc. des Usines Chimiques Rhone-Poulenc. Manufacture of derivatives of dimethyl-amino-pentanol. 36,048. December 6. (France, December 6, 1927.)

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.

ACID BORIC, COMMERCIAL.—Crystal, £30 per ton; powder, £32 per ton; extra fine powder, £34 per ton.

ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity, strength, and locality.

ACID NITRIC, 80° Tw.—£21 10s. to £27 per ton, makers' works, according to district and quality.

ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.

BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages free.

BLEACHING POWDER.—Spot, £9 10s. per ton d/d; Contract, £8 10s. per ton d/d, 4-ton lots.

BORAX, COMMERCIAL.—Crystals, £19 10s. to £20 per ton; granulated, £19 per ton; powder, £21 per ton. (Packed in 2-cwt. bags carriage paid any station in Great Britain.)

CALCIUM CHLORIDE (SOLID).—£5 to £5 5s. per ton d/d carr. paid.

COPPER SULPHATE.—£25 to £25 10s. per ton.

METHYLATED SPIRIT 61 O.P.—Industrial, 1s. 3d. to 1s. 8d. per gall., pyridinised industrial, 1s. 5d. to 1s. 10d. per gall.; mineralised, 2s. 4d. to 2s. 8d. per gall.; 64 O.P., 1d. extra in all cases.

NICKEL SULPHATE.—£38 per ton d/d.

NICKEL AMMONIA SULPHATE.—£38 per ton d/d.

POTASH CAUSTIC.—£30 to £33 per ton.

POTASSIUM BICHROMATE.—4½d. per lb.

POTASSIUM CHLORATE.—3¾d. per lb., ex wharf, London, in cwt. kegs.

SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.

SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.

SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.

SODA CRYSTALS.—£5 to £5 5s. per ton, ex railway depots or ports.

SODIUM ACETATE 97/98%.—£21 per ton.

SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.

SODIUM BICHROMATE.—3½d. per lb.

SODIUM BISULPHITE POWDER, 60/62%.—£17 10s. per ton delivered for home market, 1-cwt. drums included; £15 10s. f.o.r. London.

SODIUM CHLORATE.—2¾d. per lb.

SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.

SODIUM PHOSPHATE.—£14 per ton, f.o.b. London, casks free.

SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.

SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.

SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.

SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.b. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—6½d. to 6¾d. per lb. Crude 60's, 2s. per gall. 1929—1s. 11d. per gall.

ACID CRESYLIC 99/100.—2s. 5d. to 3s. per gall. 97/99.—2s. 2d. to 2s. 3d. per gall. Pale, 95%, 1s. 11d. to 2s. per gall. Dark, 1s. 9d. to 1s. 10d.

ANTHRACENE.—A quality, 2d. to 2½d. per unit. 40%, £5 per ton.

ANTHRACENE OIL, STRAINED.—7¾d. to 8d. per gall. Unstrained, 7¼d. to 7½d. per gall.

BENZOLE.—Prices at works: Crude, 10d. to 10½d. per gall.; Standard Motor, 1s. 4d. to 1s. 4½d. per gall.; 90%, 1s. 7d. to 1s. 8d. per gall.; Pure, 1s. 10d. to 1s. 11d. per gall.

TOLUOLE.—90%, 1s. 5d. to 1s. 10d. per gall. Firm. Pure, 1s. 10d. to 2s. per gall.

XYLOL.—1s. 3d. to 1s. 11d. per gall. Pure, 1s. 6d. to 1s. 7d. per gall.

CREOSOTE.—Cresylic, 20/24%, 9d. per gall.; Heavy, 6⅞d. to 7¾d. per gall. Middle oil, 6d. to 6½d. per gall. Standard specification, 5½d. to 5⅝d. per gall. ex works. Salty, 7½d. per gall.

NAPHTHA.—Crude, 8½d. to 9d. per gall. Solvent 90/160, 1s. 1½d. to 1s. 2½d. per gall. Solvent 95/160, 1s. 2d. to 1s. 7d. per gall. Solvent 90/190, 11d. to 1s. 4d. per gall.

NAPHTHALENE, CRUDE.—Drained Creosote Salts, £5 per ton. Whizzed, £5 per ton. Hot pressed, £8 10s. per ton.

NAPHTHALENE.—Crystals, £12 5s. to £14 10s. per ton. Quiet. Flaked, £13 to £15 per ton, according to districts.

PITCH.—Medium soft, 36s. 6d. to 42s. 6d. per ton, f.o.b., according to district. Nominal.

PYRIDINE.—90/140, 4s. 6d. to 6s. 6d. per gall. 90/180, 2s. 3d. to 3s. 6d. per gal. Heavy, 1s. 9d. to 2s. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.

ACID ANTHRANILIC.—6s. per lb. 100 %.

ACID BENZOIC.—1s. 8½d. per lb.

ACID GAMMA.—4s. 6d. per lb.

ACID H.—3s. per lb.

ACID NAPHTHIONIC.—1s. 6d. per lb.

ACID NEVILLE AND WINTHER.—4s. 9d. per lb.

ACID SULPHANILIC.—8½d. per lb.

ANILINE OIL.—8d. per lb. naked at works.

ANILINE SALTS.—8d. per lb. naked at works.

BENZALDEHYDE.—2s. 3d. per lb.

BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.

BENZOIC ACID.—1s. 8½d. per lb.

o-CRESOL 29/31° C.—5½d. per lb.

m-CRESOL 98/100%.—2s. 3d. to 2s. 6d. per lb.

p-CRESOL 32/34° C.—2s. 3d. to 2s. 6d. per lb.

DICHLORANILINE.—2s. per lb.

DIMETHYLANILINE.—1s. 11d. per lb.

DINITROBENZENE.—8½d. per lb. naked at works. £75 per ton.

DINITROCHLORBENZENE.—£84 per ton d/d.

DINITROTOLUENE.—48/50° C. 8d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.

DIPHENYLAMINE.—2s. 10d. per lb. d/d.

a-NAPHTHOL.—2s. per lb. d/d.

B-NAPHTHOL.—10d. per lb. d/d.

a-NAPHTHYLAMINE.—1s. 3d. per lb.

B-NAPHTHYLAMINE.—3s. per lb.

o-NITRANILINE.—5s. 9d. per lb.

m-NITRANILINE.—3s. per lb. d/d.

p-NITRANILINE.—1s. 8d. per lb.

NITROBENZENE.—6d. per lb. naked at works.

NITRONAPHTHALENE.—1s. 3d. per lb.

R. SALT.—2s. 2d. per lb.

SODIUM NAPHTHIONATE.—1s. 8½d. per lb. 100% basis d/d.

o-TOLUIDINE.—8d. per lb.

p-TOLUIDINE.—1s. 10d. per lb. naked at works.

m-XYLIDINE ACETATE.—2s. 6d. per lb. 100%.

N. W. ACID.—4s. 9d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £10 5s. per ton. Good demand. Grey, £14 10s. to £15 per ton. Liquor, 9d. per gall.

CHARCOAL.—£6 to £9 per ton, according to grade and locality. Foreign competition severe.

IRON LIQUOR.—1s. 3d. per gall, 32° Tw. 1s. per gall. 24° Tw.

RED LIQUOR.—9d. to 10d. per gall.

WOOD CREOSOTE.—1s. 9d. per gall. Unrefined.

WOOD NAPHTHA, MISCIBLE.—3s. 11d. to 4s. 3d. per gall. Solvent, 4s. 3d. per gall.

WOOD TAR.—£4 to £5 per ton.

BROWN SUGAR OF LEAD.—£40 15s. per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6½d. to 1s. 3d. per lb., according to quality; Crimson, 1s. 4d. to 1s. 6d. per lb., according to quality.

ARSENIC SULPHIDE, YELLOW.—1s. 9d. per lb.

BARYTES.—£2 16s. 10d. to £3 10s. per ton, according to quality.

CADMIUM SULPHIDE.—5s. to 6s. per lb.

CARBON BISULPHIDE.—£25 to £27 10s. per ton, according to quantity.

CARBON BLACK.—5½d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£45 to £54 per ton, according to quantity. drums extra.

CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.

DIPHENYLGUANIDINE.—3s. 9d. per lb.

INDIARUBBER SUBSTITUTES, WHITE AND DARK.—4⅝d. to 5⅞d. per lb.

LAMP BLACK.—£32 10s. per ton, barrels free.

LEAD HYPOSULPHITE.—9d. per lb.

LITHOPHONE, 30%.—£22 10s. per ton.

MINERAL RUBBER "RUBPRON."—£13 12s. 6d. per ton, f.o.r. London.

SULPHUR.—£9 to £11 per ton, according to quality.

SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra.

SULPHUR PRECIP. B.P.—£55 to £60 per ton.

THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb., carriage paid.

THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.

VERMILION, PALE OR DEEP.—6s. 10d. to 7s. per lb.

ZINC SULPHUR.—11d. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£39 per ton ex wharf London in glass containers.

ACID, ACETYL SALICYLIC.—2s. 4d. to 2s. 5d. per lb.

ACID, BENZOIC, B.P.—2s. to 3s. 3d. per lb., according to quantity. Solely ex Gum, 1s. 3d. to 1s. 6d. per oz., according to quantity.

ACID, BORIC B.P.—Crystal, 36s. to 39s. per cwt.; powder, 40s. to 43s. per cwt.; extra fine powder, 42s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.
ACID, CAMPHORIC.—19s. to 21s. per lb.
ACID, CITRIC.—2s. 4d. to 2s. 9d. per lb.
ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.
ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d.
ACID, SALICYLIC, B.P. PULV.—1s. 6d. to 1s. 9d. per lb. Technical.—10½d. to 11½d. per lb.
ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.
ACID, TARTARIC.—1s. 4½d. per lb., less 5%.
ACETANILIDE.—1s. 5d. to 1s. 8d. per lb. for quantities.
AMIDOL.—7s. 6d. to 9s. per lb., d/d.
AMIDOPYRIN.—7s. 9d. to 8s. per lb.
AMMONIUM BENZOATE.—3s. 3d. to 3s. 6d. per lb., according to quantity. 18s. per lb. ex Gum.
AMMONIUM CARBONATE B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimated, 1s. per lb.
ATROPINE SULPHATE.—9s. per oz.
BARBITONE.—5s. 9d. to 6s. per lb.
BENZONAPHTHOL.—3s. to 3s. 3d. per lb. spot.
BISMUTH CARBONATE.—9s. 9d. per lb.
BISMUTH CITRATE.—9s. 3d. per lb.
BISMUTH SALICYLATE.—8s. 9d. per lb.
BISMUTH SUBNITRATE.—8s. 3d. per lb.
BISMUTH NITRATE.—Cryst. 5s. 9d. per lb.
BISMUTH OXIDE.—12s. 3d. per lb.
BISMUTH SUBCHLORIDE.—10s. 9d. per lb.
BISMUTH SUBGALLATE.—7s. 9d. per lb. Extra and reduced prices for smaller and larger quantities of all bismuth salts respectively.
BISMUTHI ET AMMON LIQUOR.—Cit. B.P. in W. Qts. 1s. 0½d. per lb.; 12 W. Qts. 11½d. per lb.; 36 W. Qts., 11d. per lb.
BORAX B.P.—Crystal, 24s. to 27s. per cwt.; powder, 25s. to 28s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.
BROMIDES.—Ammonium, 2s. to 2s. 3d. per lb.; potassium, 1s. 8½d. to 1s. 11½d. per lb.; sodium, 1s. 11d. to 2s. 2d. per lb.; granulated, ½d. per lb. less; all spot. Large quantities at lower rates.
CALCIUM LACTATE.—B.P., 1s. 3d. to 1s. 4d. per lb.
CAMPHOR.—Refined flowers, 2s. 11d. to 3s. per lb., according to quantity; also special contract prices.
CHLORAL HYDRATE.—3s. 2d. to 3s. 4d. per lb.
CHLOROFORM.—2s. 5½d. to 2s. 7½d. per lb., according to quantity.
CREOSOTE CARBONATE.—6s. per lb.
ETHERS.—S.G. ·730—11d. to 1s. 0d. per lb., according to quantity; other gravities at proportionate prices.
FORMALDEHYDE, 40%.—37s. per cwt., in barrels ex wharf.
GUAIACOL CARBONATE.—4s. 6d. to 4s. 9d. per lb.
HEXAMINE.—1s. 11d. to 2s. 2d. per lb.
HOMATROPINE HYDROBROMIDE.—30s. per oz.
HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.
HYDROGEN PEROXIDE (12 VOLS.).—1s. 4d. per gallon, f.o.r. makers' works, naked. Winchesters, 2s. 11d. per gall. B.P., 10 vols., 2s. to 2s. 3d. per gall.; 20 vols., 4s. per gall.
HYDROQUINONE.—3s. 9d. to 4s. per lb., in cwt. lots.
HYPOPHOSPHITES.—Calcium, 3s. 1d. per lb.; potassium, 3s. 5d. per lb.; sodium, 3s. 4d. per lb., in 1 cwt. lots, assorted.
IRON AMMONIUM CITRATE.—B.P., 2s. 8d. to 2s. 11d. per lb. Green, 3s. 3d. to 3s. 4d. per lb.; U.S.P., 2s. 9d. to 3s. per lb.
IRON PERCHLORIDE.—18s. to 20s. per cwt., according to quantity.
IRON QUININE CITRATE.—B.P., 8½d. to 9½d. per oz., according to quantity.
MAGNESIUM CARBONATE.—Light commercial, £31 per ton net.
MAGNESIUM OXIDE.—Light commercial, £62 10s. per ton, less 2½%; Heavy commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb.
MENTHOL.—A.B.R. recrystallised B.P., 22s. 3d. per lb. net; Synthetic, 10s. to 12s. per lb.; Synthetic detached crystals, 11s. to 16s. per lb., according to quantity; Liquid (95%), 9s. 6d. per lb.
MERCURIALS B.P.—Up to 1 cwt. lots, Red Oxide, crystals, 8s. 4d. to 8s. 5d. per lb., levig., 7s. 10d. to 7s. 11d. per lb.; Corrosive Sublimate, Lump, 6s. 7d. to 6s. 8d. per lb., Powder, 6s. to 6s. 1d. per lb.; White Precipitate, Lump, 6s. 9d. to 6s. 10d. per lb., Powder, 6s. 10d. to 6s. 11d. per lb., Extra Fine, 6s. 11d. to 7s. per lb.; Calomel, 7s. 2d. to 7s. 3d. per lb.; Yellow Oxide, 7s. 8d. to 7s. 9d. per lb.; Persulph., B.P.C., 6s. 11d. to 7s. per lb.; Sulph. nig., 6s. 8d. to 6s. 9d. per lb. Special prices for larger quantities.
METHYL SALICYLATE.—1s. 3d. to 1s. 6d. per lb.
METHYL SULPHONAL.—8s. 9d. to 9s. per lb.
METOL.—9s. to 11s. 6d. per lb. British make.
PARAFORMALDEHYDE.—1s. 9d. per lb. for 100% powder.
PARALDEHYDE.—1s. 4d. per lb.
PHENACETIN.—2s. 5d. to 2s. 8d. per lb.
PHENAZONE.—3s. 9d. to 4s. per lb.
PHENOLPHTHALEIN.—6s. to 6s. 3d. per lb.
POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—96s. per cwt., less 2½ per cent.
POTASSIUM CITRATE.—B.P.C., 2s. 8d. to 2s. 9d. per lb.
POTASSIUM FERRICYANIDE.—1s. 9d. per lb., in cwt. lots.
POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb., according to quantity
POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included f.o.r. London.
POTASSIUM PERMANGANATE.—B.P. crystals, 5½d. per lb., spot.
QUININE SULPHATE.—1s. 8d. to 1s. 9d. per oz., bulk in 100 oz. tins.
RESORCIN.—2s. 10d. to 3s. per lb., spot.
SACCHARIN.—47s. per lb.; in quantity lower.
SALOL.—2s. 3d. to 2s. 6d. per lb.
SODIUM BENZOATE, B.P.—1s. 8d. to 1s. 11d. per lb.
SODIUM CITRATE, B.P.C., 1911—2s. 5d. to 2s. 6d. per lb., B.P.C. 1923—2s. 8d. to 2s. 9d. per lb. U.S.P., 2s. 6d. to 2s. 9d. per lb., according to quantity.
SODIUM FERROCYANIDE.—4d. per lb., carriage paid.
SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 per ton, d/d consignee's station in 1-cwt. kegs.
SODIUM NITROPRUSSIDE.—16s. per lb.
SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—95s. to 100s. per cwt. Crystals, 5s. per cwt. extra.
SODIUM SALICYLATE.—Powder, 1s. 6½d. to 1s. 7d. per lb. Crystal, 1s. 7d. to 1s. 8d. per lb.
SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 1d. per lb
SODIUM SULPHITE, ANHYDROUS.—£27 10s. to £28 10s. per ton, according to quantity. Delivered U.K.
SULPHONAL.—6s. 6d. to 6s. 9d. per lb.
TARTAR EMETIC, B.P.—Crystal or powder, 2s. 1d. to 2s. 3d. per lb.
THYMOL.—Puriss., 9s. 6d. to 9s. 9d. per lb., according to quantity. Firmer. Natural, 12s. 6d. per lb.

Perfumery Chemicals

ACETOPHENONE.—6s. 6d. per lb.
AUBEPINE (EX ANETHOL).—11s. per lb.
AMYL ACETATE.—2s. 6d. per lb.
AMYL BUTYRATE.—4s. 9d. per lb.
AMYL SALICYLATE.—2s. 9d. per lb.
ANETHOL (M.P. 21/22° C.).—5s. 3d. per lb.
BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL—1s. 10d. per lb.
BENZYL ALCOHOL FREE FROM CHLORINE.—1s. 10d. per lb.
BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.
BENZYL BENZOATE.—2s. 3d. per lb.
CINNAMIC ALDEHYDE NATURAL.—15s. 6d. per lb.
COUMARIN.—8s. 6d. per lb.
CITRONELLOL.—12s. per lb.
CITRAL.—8s. per lb.
ETHYL CINNAMATE.—6s. per lb.
ETHYL PHTHALATE.—2s. 9d. per lb.
EUGENOL.—12s. per lb.
GERANIOL (PALMAROSA).—20s. per lb.
GERANIOL.—6s. 6d. to 11s. per lb.
HELIOTROPINE.—5s. per lb.
ISO EUGENOL.—16s. per lb.
LINALOL.—Ex Bois de Rose, 13s. per lb. Ex Shui Oil, 9s. 3d. per lb.
LINALYL ACETATE.—Ex Bois de Rose, 17s. 6d. per lb. Ex Shui Oil Linalol. 10s. 6d. per lb.
METHYL ANTHRANILATE.—8s. per lb.
METHYL BENZOATE.—4s. per lb.
MUSK KETONE.—34s. per lb.
MUSK XYLOL.—7s. per lb.
NEROLIN.—3s. 9d. per lb.
PHENYL ETHYL ACETATE.—11s. per lb.
PHENYL ETHYL ALCOHOL.—10s. 6d. per lb.
RHODINOL.—45s. per lb.
SAFROL.—1s. 6d. per lb.
TERPINEOL.—1s. 6d. per lb
VANILLIN.—16s. per lb.

Essential Oils

ALMOND OIL.—Foreign S.P.A., 10s. 6d. per lb
ANISE OIL.—2s. 9d. per lb.
BERGAMOT OIL.—23s. per lb.
BOURBON GERANIUM OIL.—20s. per lb.
CAMPHOR OIL.—9d. per lb.
CANANGA OIL, JAVA.—12s. per lb.
CINNAMON OIL LEAF.—6s. 9d. per oz.
CASSIA OIL, 80/85%.—6s. 6d. per lb.
CITRONELLA OIL.—Java, 2s. 2d. per lb., c.i.f. U.K. port. Ceylon, pure, 1s. 11d. per lb.
CLOVE OIL (PURE 90/92%).—9s. 6d. per lb.
EUCALYPTUS OIL, AUSTRALIAN, B.P. 70/75%.—2s. per lb.
LAVENDER OIL.—Mont Blanc, 48/50%, Esters, 16s. 3d. per lb.
LEMON OIL.—15s. 6d. per lb.
LEMONGRASS OIL.—4s. per lb.
ORANGE OIL, SWEET.—22s. 6d. per lb.
OTTO OF ROSE OIL.—Anatolian, 35s. per oz. Bulgarian, 75s. per oz.
PALMA ROSA OIL.—12s. 6d. per lb.
PEPPERMINT OIL.—Wayne County, 16s. per lb.; Japanese, 8s. 9d. per lb.
PETITGRAIN.—9s. per lb.
SANDALWOOD.—Mysore, 28s. per lb., 95% 19s per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.*

London, December 13, 1928.

THERE has been fair activity during the past week, mainly on account of forward business, as the majority of prices for next year's contracts are now published. Prices in general rule firm, with one or two products recording increases. Export trade continues to improve.

General Chemicals

ACETONE.—Demand is brisk, with price very firm at £75 to £77 10s. As and from January 1, imports are again dutiable and higher prices appear inevitable. Stocks appear to be light, as the market is still feeling the effects of the acute shortage which occurred a short time back.

ACID ACETIC.—A quietly steady trade is passing at unchanged rates.

ACID CITRIC.—Slightly reduced prices are now being offered from the high figures reached during the past few months. Present price about 2s. 4½d.

ACID FORMIC.—Slightly easier prices are being offered, which is stimulating the demand, and a good business is being done at about £43 for 85%.

ACID LACTIC.—A quietly steady trade is passing at about £43 for 50% weight pale quality.

ACID OXALIC.—Demand has not been quite so active, and prices are holding firm at £30 10s. to £32 10s., according to quantity and position.

ACID TARTARIC.—Demand has not been quite so active, but price is maintained at 1s. 4½d. to 1s. 4⅜d., less 5% for early delivery.

AMMONIUM CHLORIDE.—Fine white crystals 98/100% are rather slow of sale at the unchanged price of £19. Dog-tooth crystals are in short supply and price is higher.

ALUMINA SULPHATE.—Demand is brisk and higher prices are quoted at about £6 15s. to £7 per ton, with material in short supply.

ARSENIC.—Demand rather slow and price unchanged at about £16 f.o.r. mines.

BARIUM CHLORIDE.—Market is practically bare of spot supplies and near arrivals command a premium. Firm conditions are likely for some time, in view of works' productions for the next few months being sold out. Nominal price, £11 to £11 10s.

COPPER SULPHATE.—Firm conditions still rule, with an active demand.

CREAM OF TARTAR.—Business has not been quite so brisk, but price is practically unchanged at about £97 10s. to £99, less 2½% for B.P. best brands.

FORMALDEHYDE.—A brisker demand has set in, and price tends to be firmer. Present price about £39.

LEAD ACETATE.—Price is unchanged for white and brown, with a steady business passing: white, £42 10s., and brown £1 ton less.

LIME ACETATE.—Grey quality continues in short supply, with demand brisk and price firm.

LEAD NITRATE.—Unchanged at £36 to £36 10s. with a fair trade.

LITHOPONE.—Firm and demand improving. Present price about £19 to £20 10s. per ton for best brands.

METHYL ACETONE.—A firmer tendency is setting in and prices may go higher. Demand is brisk. Present price for 45%, £58 to £60 per ton.

METHYL ALCOHOL.—Very firm, and prices inclined to advance.

POTASSIUM CARBONATE AND CAUSTIC.—Unchanged and in steady regular demand.

POTASSIUM CHLORATE.—Good business is being effected and price holds firm at about £28.

POTASSIUM PERMANGANATE.—Demand is improving and price for B.P. quality firm at 5¼d. to 5½d.

POTASSIUM PRUSSIATE.—A good trade is passing at firm rates of £63 10s. to £65 10s., according to quantity.

SODIUM ACETATE.—Market still rather short of supplies and product in good demand. Price holds firm at £21 10s. to £22.

SODIUM BICHROMATE.—A brisk demand is being experienced with price firm at 3½d.

SODIUM CHLORATE.—A better inquiry is being received and price is firmer at about £25 to £26.

SODIUM PRUSSIATE remains firm and in good request at 4½d. to 5¼d. per lb., according to quantity.

TARTAR EMETIC.—Demand has been better and price holds firm at about 10½d.

ZINC SULPHATE.—Firm and in good demand at £12 to £13 per ton.

Coal Tar Products

The coal tar products market is quiet, with little inquiry, and there is little change in prices to report from last week.

MOTOR BENZOL remains scarce, the price being about 1s. 7½d. per gallon, f.o.r. maker's works.

SOLVENT NAPHTHA is firm at 1s. 2½d. per gallon on rails.

HEAVY NAPHTHA is unchanged at 1s. 1d. to 1s. 1½d. per gallon on rails.

CREOSOTE OIL is still weaker, and can be bought at 5¼d. per gallon on rails in the North. The price in London remains at 6d. per gallon.

CRESYLIC ACID remains weak, and the price has declined still further. The 98/100% quality is quoted at 2s. per gallon, f.o.b., and the dark quality, 95 97%, at about 1s. 10d. per gallon, f.o.b. naked.

NAPHTHALENE is weaker, and larger quantities are becoming available. The firelighter quality can be obtained at about £4 10s. per ton, the 74/76 quality at £5 per ton, and the 76/78 quality at £6 to £6 5s. per ton.

PITCH is unchanged at about 40s. per ton, f.o.b. U.K. port.

Nitrogen Products

Sulphate of Ammonia.—The market continues firm with prices unchanged. It is understood that the demand on the Continent has shown a considerable increase on that of last year, and it is not anticipated that producers will have any difficulty in adhering to the rising price scales which they have announced. As the consuming season gets nearer, merchants who buy early are covering their requirements for the spring. As usual, some merchants with storage capacity are taking December delivery in order to get the benefit of the producers' rising price scale.

Nitrate of Soda.—Satisfactory sales are again reported for delivery in Egypt and Europe. These sales, of course, have been made to large distributors. It remains to be seen whether the whole stock can be disposed of during the consuming season. In America a slight improvement for prompt delivery is reported. The market holds firm at $2.17½ per 100 lb. for December delivery, with higher prices for forward.

Latest Oil Prices

LONDON, December 12.—LINSEED OIL was steady, but quiet, at unchanged rates. Spot, ex-mill, £29 5s.; December and January, £28 5s.; January-April, £28 2s. 6d.; May-August, £28 10s.; and September-December, £28 17s. 6d., naked. RAPE OIL was firm and 20s. per ton higher at £42 for crude-extracted and £44 for technical refined, naked, ex wharf. COTTON OIL was quiet and unchanged. Egyptian, crude, £30 10s.; refined common edible, £36; and deodorised, £38, naked, ex mill. TURPENTINE was dull and 3d. per cwt. lower. American, spot, 48s. 6d.; January-April, 49s. 3d.

Calcium Cyanamide 20·6% N

FERTILIZER SALES, LTD., announce that cyanamide for spring delivery is supplied in 4-ton lots, carriage paid to any station in Great Britain, at the following prices (in 2 cwt. bags):—

	Per ton. £ s. d.
January	9 12 0
February	9 14 0
March/June	9 16 0

Lots of less than 4 tons, but not less than 2 tons, 5s. per ton extra; less than 2 tons, but not less than 1 ton, 10s. per ton extra.

South Wales By-Products

THERE is no change of note in South Wales by-product activities. Demand generally is moderate, but prices are maintained. The call for pitch is below that usual for this time of the year, but the value 38s. to 42s. 6d. per ton prompt delivery is firm. Whizzed naphthalene has practically no demand round 100s. per ton, while crude is just a little better with a quotation of 80s. per ton. Refined tars are quiet, but, although moderate, the demand is fairly steady. Values are unchanged, gasworks tar continuing to change hands round about 6½d. to 7d. per gallon, delivered, and coke oven tar at from 7d. to 7¾d. per gallon, delivered. Road tar is unchanged at from 13s. to 16s. per barrel of 40 gallons, filled free or plus barrel hire. Patent fuel and coke exports are better, but prices are unchanged. Patent fuel, ex ship Cardiff, from 20s. to 21s. 6d. per ton, ex ship Swansea, 19s. 6d. to 19s. 9d. per ton. Coke, best foundry, 32s. 6d. to 37s. per ton; furnace, 19s. to 21s. per ton.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.*

Glasgow, December 12, 1928.

BUSINESS in the heavy chemical market remains fairly good, and contract business which is now being fixed up for next year shows anticipation by consumers to be rather more optimistic than when last year's business was being arranged.

Industrial Chemicals

ACETONE, B.G.S.—Nominally £74 10s. to £77 10s. per ton, ex wharf, according to quantity, but very little available for immediate delivery.

ACID ACETIC, 98/100%.—Glacial £56 to £67 per ton, according to quality and packing, c.i.f. U.K. ports; 80% pure, £37 10s. per ton, ex wharf; 80% technical, £37 10s. per ton, ex wharf.

ACID BORIC.—Crystals, granulated or small flakes, £30 per ton. Powder, £32 per ton, packed in bags, carriage paid U.K. stations.

ACID CARBOLIC, ICE CRYSTALS.—In good demand and low quoted 6¾d. per lb., delivered or f.o.b. U.K. ports.

ACID CITRIC, B.P. CRYSTALS.—Now offered at 2s. 6½d. per lb., less 5%, ex wharf, prompt shipment from the Continent.

ACID HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. per carboy. Dearsenicated quality, 5s. 6d. per carboy, ex works, full wagon loads.

ACID NITRIC, 80°.—£24 10s. per ton, ex station, full truck loads.

ACID OXALIC, 98/100%.—On offer from the Continent at 3½d. per lb., ex wharf. Spot material quoted 3¾d. per lb., ex store. In better demand.

ACID SULPHURIC.—£2 15s. per ton, ex works, for 144° quality. £5 15s. per ton for 168° quality. Dearsenicated quality 20s. per ton extra.

ACID TARTARIC, B.P. CRYSTALS.—Quoted 1s. 4½d. per lb., less 5%, ex wharf. Offered for prompt shipment at 1s. 4d. per lb., less 5%, ex wharf.

ALUMINA SULPHATE.—On offer at £5 10s. per ton, c.i.f. U.K. ports. Spot material quoted £5 15s. per ton, ex store.

ALUM, LUMP POTASH.—Quoted £8 7s. 6d. per ton, c.i.f. U.K. ports, prompt shipment from the Continent. Crystal meal quoted £8 10s. per ton, ex store.

AMMONIA ANHYDROUS.—Quoted 9½d. per lb., carriage paid. Containers extra and returnable.

AMMONIA CARBONATE.—Lump, £37 per ton; powdered, £39 per ton, packed in 5 cwt. casks, delivered or f.o.b. U.K. ports.

AMMONIA LIQUID, 880.—Unchanged at about 2½d. to 3d. per lb., delivered according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture quoted £21 to £22 per ton, ex station. Fine white crystals offered from the Continent at about £17 5s. per ton, c.i.f. U.K. ports.

ANTIMONY OXIDE, 98/100%.—On offer for prompt shipment from China at £39 10s. per ton, ex wharf.

ARSENIC, WHITE POWDERED.—Quoted £18 10s. per ton, ex wharf, prompt dispatch from mines. Spot material on offer at £19 15s. per ton, ex store.

BARIUM CHLORIDE.—Quoted £9 15s. per ton, c.i.f. U.K. ports, prompt shipment from the Continent. Spot material on offer at £11 per ton, ex wharf.

BLEACHING POWDER.—British manufacturers' contract price to consumers £6 12s. 6d. per ton, delivered minimum 4-ton lots. Continental on offer at £6 10s. per ton, ex wharf.

CALCIUM CHLORIDE.—British manufacturers' price £4 5s. to £4 15s. per ton, according to quality and point of delivery. Continental material on offer at £3 12s. 6d. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works, or £4 12s. 6d. per ton, f.o.b. U.K. ports for export.

COPPER SULPHATE.—Quoted £25 5s. per ton, ex wharf, but some cheaper parcels on offer in limited quantity.

FORMALDEHYDE, 40%.—Firmer. Offered for prompt shipment, c.i.f. U.K. ports, at £37 per ton. Spot material quoted £38 10s. per ton, ex store.

GLAUBER SALTS.—English material unchanged at £4 per ton, ex store, or station. Continental quoted £2 15s. per ton, c.i.f. U.K. ports.

LEAD, RED.—On offer at £29 10s. per ton, ex store.

LEAD, WHITE.—Quoted £37 10s. per ton, c.i.f. U.K. ports.

LEAD ACETATE.—White crystals quoted £41 per ton, ex store. Brown on offer at about £31 10s. per ton, ex store.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store. In moderate demand.

METHYLATED SPIRIT.—Industrial quality 64 O.P. quoted 1s. 4d. per gallon, less 2½%, delivered.

POTASSIUM BICHROMATE.—4½d. per lb., delivered, minimum 4-ton lots. Under 4-ton lots ¼d. per lb. extra.

POTASSIUM CARBONATE, 96/98%.—Offered from the Continent at £25 per ton, c.i.f. U.K. ports. Spot material available at £26 per ton, ex store.

POTASSIUM CHLORATE, 99¾/100%, POWDER.—Quoted £22 15s. per ton, c.i.f. U.K. ports.

POTASSIUM NITRATE.—Refined granulated quality quoted £19 2s. 6d. per ton, c.i.f. U.K. ports. Spot material on offer at about £20 10s. per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Quoted 5¼d. per lb., ex wharf.

POTASSIUM PRUSSIATE (YELLOW).—Spot material quoted 6¾d. per lb., ex store. Offered from the Continent at 6½d. per lb., ex wharf, prompt shipment.

SODA CAUSTIC.—Powdered, 98/99%, £17 17s. 6d. per ton; solid, 76/77%, £14 10s. per ton, and 70/72% £13 12s. 6d. per ton, minimum 4-ton lots, carriage paid on contract. Spot material 10s. per ton extra.

SODIUM ACETATE.—On offer for prompt delivery at about £21 5s. per ton, ex store.

SODIUM BICARBONATE.—Refined recrystallised, £10 10s. per ton, ex quay or station. M.W. quality, 30s. per ton less.

SODIUM BICHROMATE.—Quoted 3d. per lb., delivered buyers' works, minimum 4-ton lots. Under 4 and over 2-ton lots, 1-16d. per lb. extra. Under 2-ton lots, 3¼d. per lb.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station. Powdered or pea quality, 27s. 6d. per ton extra. Light soda ash, £7 3s. 9d. per ton, ex quay, minimum 4-ton lots, with various reductions for contracts.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £8 17s. 6d. per ton, ex station, minimum 4-ton lots. Pea crystals on offer at £14 15s. per ton, ex station, minimum 4-ton lots. Prices for next year unchanged.

SODIUM NITRATE.—Price now £10 6s. per ton, carriage paid buyers' sidings for 95% quality. Usual extras for refined quality.

SODIUM PRUSSIATE.—Spot material on offer at 4¾d. per lb., ex store.

SODIUM SULPHATE (SALTCAKE).—Prices, 50s. per ton, ex works; 52s. 6d. per ton delivered, for unground quality. Ground quality, 2s. 6d. per ton extra.

SODIUM SULPHIDE.—Prices for home consumption :—Solid, 60/62%, £9 per ton; broken, 60/62%, £10 per ton; crystals, 30/32%, £7 2s. 6d. per ton, delivered buyers' works on contract, minimum 4-ton lots. Special prices for some consumers. Spot material 5s. per ton extra. Prices for next year unchanged.

SULPHUR.—Flowers, £12 per ton; roll, £10 15s. per ton; rock, £10 12s. 6d. per ton; ground American, £9 5s. per ton, ex store.

ZINC CHLORIDE, 98%.—British material now quoted £22 10s. per ton, f.o.b. U.K. ports.

ZINC SULPHATE.—Offered from the Continent at about £10 5s. per ton, ex wharf.

NOTE.—The above prices are for bulk business, and are not to be taken as applicable to small parcels.

Reorganisation Proposals of Lawes' Chemical Manure Co.

MR. E. G. CUBITT (the chairman) presided on Thursday, December 6, at the Great Eastern Hotel, E.C., at the annual meeting of Lawes' Chemical Manure Co., Ltd., and, in moving the adoption of the report and accounts, said the important matter with which they had to deal was the dissatisfaction felt by the shareholders, and also by the directors (who had large holdings), that there had not been sufficient balance of profit for several years past to justify a dividend. Apart from that, in many respects the balance-sheet was a strong one. The time had come, in the opinion of the board, for the reorganisation of their business. The board proposed to discontinue those portions of the business which they considered had definitely proved unprofitable and to reduce the present works, retaining only ample premises for future operations. The board had under their scheme the clearing of a portion of the works site, which with a large piece of land adjoining at present unused, but all fronting the river with a valuable jetty, they were advised would bring in a considerable sum. They had a large site bordering Barking Creek, small portions of which had been sold at good prices, but leaving a considerable acreage. The report and accounts were adopted, and a resolution of confidence in the directors was passed, appealing to them to proceed on their reorganisation on the lines of "Scheme C," which involves a reduction of share capital and return to the shareholders in cash the capital found to be in excess of the future requirements of the company.

Manchester Chemical Market

(From Our Own Correspondent.)

Manchester, December 13, 1928.

Considering the period of the year and the condition of some of the consuming industries, the movement of heavy chemicals is on a fairly satisfactory scale. Competition among sellers, however, is still very keen and there is little indication of profit margins improving. Up to the time of writing no price revisions for next year's contract deliveries have been announced by British makers and interest among consumers is growing with regard to the possibilities in this direction.

Heavy Chemicals

Bicarbonate of soda is being called for in pretty regular quantities and offers of this material are maintained on the basis of £10 10s. per ton. The demand for chlorate of soda is of moderate extent and prices are steady at from 2¾d. to 3d. per lb. With regard to bleaching powder, occasional low offers are being met with on this market, quotations varying from about £6 15s. to £7 per ton. Sulphide of sodium is attracting some attention, current values of the commercial grade being at round £8 per ton, with the 60-65 per cent. concentrated solid quality at from £9 10s. to £10. There has only been a limited call for phosphate of soda during the past week but at £12 10s. per ton the price situation shows little change. Alkali is well held at £6 2s. 6d. per ton in contract parcels and a fair business is passing. Salt-cake is in quiet demand although still offering at round £2 12s. 6d. per ton. Prussiate of soda meets with a moderate volume of inquiry at from 4½d. to 5¼d. per lb., according to quantity. Caustic soda keeps firm at from £13 7s. 6d. to £15 7s. 6d. per ton, according to grade, and sales are about up to their recent level. With regard to bichromate of soda, there is a quietly steady demand about for this material with offers at 3⅛d. per lb. Hyposulphite of soda is on the quiet side but at £9 per ton for the commercial and £15 5s. for the photographic quality quotations are pretty much as at last report.

There has been a moderate demand for carbonate of potash during the past week and offers keep up at £26 5s. per ton. Yellow prussiate of potash is steady at 6¾d. to 7¼d. per lb., and a moderate selling movement in this section is taking place. Offers of caustic potash continue on the basis of £33 5s. per ton for prompt delivery of one to five-ton lots, and the demand for this has been about maintained. Permanganate of potash is rather slow at 5½d. per lb. for the B.P. and about 5¼d. for the commercial grade. Bichromate of potash is in fair request and values are well held in the neighbourhood of 4d. per lb. With regard to chlorate of potash, a moderate amount of inquiry for this has been reported during the week, with prices steady at from 2¾d. to 3d. per lb.

There has been no apparent improvement in the demand for arsenic and there seems to be a tendency for further weakness to develop, white powdered, Cornish makes, being quoted at a maximum of £16 10s. per ton, at the mines. A fairly satisfactory business is passing in the case of sulphate of copper and offers are very firm at round £26 15s. per ton, f.o.b. Brown acetate of lime shows little change on the week at £9 per ton, but grey material is stronger if anything at up to £17. The lead products are in rather slow request although not quotably changed: nitrate remains at about £35 per ton, with brown acetate at £39 and white at £40.

Acids and Tar Products

Offers of prompt parcels of citric acid are available at somewhat lower rates, from 2s. 4d. to 2s. 5d. per lb. being about the current range of values. There is no special feature about the demand for oxalic acid, quotations for which are at 3¼d. per lb. Tartaric acid is in moderate request, with prices reasonably steady at 1s. 4d. per lb. Acetic acid is rather quieter although offers keep firm at up to £67 per ton for glacial and £36 for the 80 per cent. commercial.

Only a quiet demand is still about for pitch and prices remain nominal at £1 16s. to £1 17s. per ton, f.o.b. Neither for home nor foreign buyers is the call for creosote oil any freer, and down to 5¼d. per gallon, naked, is now being quoted. Carbolic acid crystals are in moderate request and steady at about 6¼d. per lb., with crude 60's material displaying some easiness at about 1s. 11d. per gallon, at works. There is a quiet business passing in solvent naphtha at 1s. 1d. per gallon.

An I.C.I. Plant to be Closed

Widnes Chamber of Commerce and Unemployment

The caustic soda plant at the Muspratt works of Imperial Chemical Industries, Ltd., at Widnes, is to be closed down at the end of December. About 400 workpeople will be affected, of whom a number will be transferred to other works of the company. Those over 60 years of age who have been with the company for 15 years are to be pensioned off, while employees under 60 and over 21 years who have been with the company five years or more will be given a lump sum proportionate to their service, if employment cannot be found elsewhere for them by the company.

The problem created by closing down works or the discontinuance of processes has been the subject of correspondence between the Widnes Chamber of Commerce and Imperial Chemical Industries, Ltd. Letters from Lord Melchett, Sir Max Muspratt and Dr. G. C. Clayton were read at a meeting of the Chamber on Monday, December 3, with reference to changes which have recently taken place in Widnes.

The secretary reported that he had sent to the directors of I.C.I. a copy of the Chamber's resolution asking for consideration to be given to the claims of Widnes as a manufacturing centre, particularly in view of their recent decision to close down certain works or processes in the borough. The letter pointed out that already the burden of unemployment and consequent depression in distributive and other trades in Widnes was very acute.

Correspondence with I.C.I.

In reply to that letter the secretary of I.C.I. had written as follows:—"I am directed by Lord Melchett to assure you that the claims of Widnes as a manufacturing centre are receiving constant consideration by the directors of the Imperial Chemical Industries, Ltd. Every endeavour has been, and will be, made to mitigate the effects of such transfers of manufacture as are rendered inevitable by changing economic conditions, and Lord Melchett and his colleagues on the board appreciate very much your assurance that the Widnes Chamber of Commerce will co-operate in any way possible towards this end."

In his reply Dr. G. C. Clayton stated that he had discussed their letter to Imperial Chemical Industries with Lord Melchett and Sir Max Muspratt, and he could assure them that the question of employment in Widnes was receiving the closest and most sympathetic consideration. Sir Max Muspratt also wrote a personal letter in reference to the matter.

Mr. Walwyn White remarked that he thought it would be interesting to the public of Widnes to know that the directors of I.C.I. had not lost sight of Widnes. He was aware that Dr. Clayton had been doing his very best for the last twelve months to retain as much work as possible in Widnes, and he was exceedingly sorry that the result had not been as he had hoped.

Motor Fuels Alternative to Petrol

In a paper entitled "Liquid Fuels, Alternative or Supplementary to Petrol, for Use in Internal Combustion Engines for Road Vehicles," read on Monday at a joint meeting of members of the Institute of Transport and of the Institute of Fuel, at the Institution of Electrical Engineers, Savoy Place, Dr. W. R. Ormandy declared: "At a price, coal-owning countries can be made independent of imported oil should necessity arise, and no doubt the continued research which is being directed to high-pressure methods will eventually lead to more economic production. There is a practically unlimited market to-day for any organic liquid which will mix with petrol and give to the mixture an ability to stand high compression without 'pinking,' and such fuels can be expected to bring a higher price than petrol in the world's market."

Professor A. Metral, of Paris, in a paper with a similar title, said that the petroleum situation was a source of danger in the non-producing countries to the working of certain industries, transport in particular. The result was, even in times of peace, an economic menace and a veritable burden. The proportion of the total production of the world produced in France since 1918 was only one two-thousandth, while the average consumption over the same period was rather more than one-hundredth.

Company News

POWER-GAS CORPORATION.—The profit for the year to September 30 last was £18,237. A sum of £3,000 is placed to reserve and £10,382 is to be carried forward.

BOOT'S PURE DRUG CO.—An interim dividend of 24 per cent per annum, less income tax, is announced on the ordinary shares for the quarter, payable on January 1.

COURTAULD'S.—The dividend on the 5 per cent. cumulative preference shares will be paid on January 1, 1929, to shareholders on the books at the close of business on December 6, 1928.

ROOIBERG MINERALS.—An interim dividend of 2½ per cent. (6d. per share) has been declared for the half-year ending December 31, 1928, payable to all shareholders registered on that date.

TARMAC.—The board have authorised the payment on January 1 next of a dividend on the 5½ per cent. free of income tax cumulative preference shares in respect of the half-year ending December 31, 1928.

EGYPTIAN SALT AND SODA CO.—The gross profit for the year ended August 31, 1928, was £E74,010, against £E50,770. Net net profit was £E68,072, compared with £E43,647. The board proposes to set aside for staff provident fund £E3,000, placing to reserve for renewals, etc., £E38,000, placing to reserve to be devoted to stabilisation of future dividends £E24,267, and paying a dividend of 2s. per share, equal to 10 per cent., carrying forward £E1,737, compared with £E47,467 brought in.

SULPHIDE CORPORATION.—The net profit for the year ended June 30, after providing £23,000 for taxation, was £125,180 (against £76,484 for 1926-27, after providing £49,916 to cover reopening operations at Central Mine, £14,781 in respect of capital expenditure, £13,000 for taxation, and transferring £8,400 to reserve for contingencies). The directors recommend dividends of 10 per cent. on the preference and 10 per cent. on the ordinary shares, absorbing £105,000, leaving £20,180 to be carried to the accumulated profit account (against £31,484). For 1926-27 the only dividend paid was 7½ per cent. on the preference shares. With the above-mentioned addition, the accumulated profits account, which is used in the business, will amount to £528,531.

Professor Armstrong and the Bishops

PROFESSOR H. E. ARMSTRONG, addressing the Society of the Chemical Industry (Liverpool Section) on Thursday, December 6, said that remarkable work was done by Jacques Loeb in effecting the artificial fertilisation of unimpregnated ova of certain simple organisms and frog spawn. "I know no more wonderful work or a more awkward one for the bishops and others who still accept the implications of the first chapter of Genesis. Anyone who can witness such a marvel without being aware of our utter littleness as trustworthy exponents of any natural process can have little sense of religion. The religion those can hold who have even a faint understanding of vital change is of a depth no bishop can understand, involving a far higher sense of values than he can have in his ignorance of natural phenomena. Let this be my answer to the Archbishop-Designate of York, who last week told his hearers that "professors, after all, were a negligible quantity." The day cannot be far off when his party will have to treat with ours on a basis of knowledge, not on one of mere declamation, stark assumption, and misrepresentation of the views we hold."

Nitralloy Steel

IT is authoritatively reported that John Brown and Co., Ltd., and Thos. Firth and Co., Ltd., the famous Sheffield steel manufacturers, have jointly bought the British and Dominions rights in a new nitralloy steel, and that a new company, Nitralloy, Ltd., will be formed by the two firms who will establish a plant in Sheffield for the development of the process. The new company will also grant licenses to large users to install their own plants. It is claimed that the new steel withstands wear and tear better than anything known at present, and that its use will increase the speed and efficiency of motor engines. Parts are treated with ammonia at 500° C., when the ammonia dissociates and part of the nitrogen acts on the steel forming a very hard surface.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

CAUSTIC SODA, ANILINE DYES.—The High Commissioner for the Union of South Africa is inviting tenders for supply of prison requisites, including 20,000 lb. caustic soda, 98 per cent., for soap-making, and 56 lb. Bismarck brown aniline dye in 1 lb. packets, best quality. Further details may be obtained from the High Commissioner for the Union of South Africa, South Africa House, Trafalgar Square, London. (Reference Regn. A.4372.)

DISINFECTANT FLUID AND SHEEP DIP.—The New Zealand Government Stores Control Board is calling for tenders for the supply of disinfectant fluid and sheep dip. (Reference B.X. 4,933.)

AMMONIA PIPING.—The Town Council of Johannesburg is calling for tenders for the supply of ammonia piping, coils, valves and circular cork insulation. (Contract No. 99.) (Reference No. A.X. 7,249.)

DRUGGISTS SUPPLIES, PHARMACEUTICAL PRODUCTS.—A commission agent established at Brussels is desirous of obtaining the representation of British manufacturers of the goods mentioned above. (Reference No. 460.)

Tariff Changes

FRANCE.—Particulars are given in the *Board of Trade Journal* for week ending December 6 of some recent decisions of French Customs Department with regard to the classification of various articles under the French Customs Tariff, and including several chemicals. Information as to the rate of duty leviable may be obtained from the Department of Overseas Trade, 35, Old Queen Street, London, S.W.1.

SPAIN.—A Royal Decree makes provision for the refund of import duties and sales tax paid on benzine, petroleum, or other mineral oils (turpentine substitutes) used in the preparation of exported wares of rubber and asbestos, and various types of varnish.

British Association of Chemists

A SMOKING concert organised by the London Section was held at the Broad Street Station Grill-Room on Friday, December 7. Between 70 and 90 were present, and the performers were all either members of the London Section or their friends. The artistes included Mrs. Cosbie, Miss Negus, Mrs. Rhodes, Messrs. Fleet, Fleck, Price and Redgrove. The smoking concert, which is now an annual feature of the London Section's programme, proved so popular that it is suggested that another should be held in the spring. The committee wish it known that these concerts are open to all chemists, whether members or the Association or not. Chemists who can contribute to the programme will be especially welcomed, and those prepared to assist in this way on any future occasion are invited to communicate with the head office. Professor G. T. Morgan presided, and the proceedings closed with a hearty vote of thanks to the Chairman.

The European Zinc Cartel

REPRESENTATIVES of Great Britain, Germany, France, Belgium, and Silesia, at a meeting held in Brussels on Tuesday, under the presidency of M. St. Paul de Sincay, concluded an agreement for the formation of a European zinc cartel. The agreement provides for a reduction of output from January 1, 1929, subject to ratification by the boards of the companies concerned. The situation will be reviewed periodically with a view to balancing production with consumption, the object being to stabilise the price of zinc with due regard to the interests of miners, smelters, and consumers, without interfering with the normal development of the industry. Adequate steps have been taken to allow the progressive development of new European electrolytic works without disturbance of the price of the metal.

It is learned that the price of zinc has been fixed at £27.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

McLAY, John Gordon, Victoria Works, 22, Lowfield Street, Dartford, case hardening compound manufacturer. (C.C., 15/12/28.) £15 13s. 2d. November 1.

STANSFIELD, J. Boothfold, Waterfoot, chemical manufacturer. (C.C., 15/12/28.) £25 12s. 8d. November 9.

Mortgages and Charges

*[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case, the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]*

BENZOL AND BY-PRODUCTS, LTD., London, S.W. (M., 18/12/28.) Registered November 26, debenture, to Bank; charged on Mawsons Farm, etc., also general charge. *Nil. March 13, 1928.

GRAESSER-MONSANTO CHEMICAL WORKS, LTD. Ruabon. (M., 15/12/28.) Registered November 20, £86,400 debenture, to R. Graesser (1926), Ltd., Ruabon; charged on property at Ruabon, also general charge. *Nil. July 4, 1928.

NITRO-CELLULOSE EXPLOSIVES CO., LTD., London, W.C. (M., 15/12/28.) Registered November 27, £200 debentures part of £12,500; also registered November 28, £100 debentures part of £12,500; also registered November 30, £200 debentures, part of £12,500; general charge.

SWANPAMUR, LTD., London, W.C., paint manufacturers. (M., 15/12/28.) Registered November 30, £1,000 debentures; general charge. *Nil. December 31, 1927.

New Companies Registered

CREASE AND SON, LTD., 238 and 240, Whitechapel Road, London, E. Registered December 3. Nom. capital, £1,000 in £10 shares. Dealers in and grinders of dry white lead, dealers in ground white lead and other pigments, etc. Directors: C. A. D. Harman, F. W. Turquand, O. G. Harman.

NELSON KEANE AND CO., LTD., Station Buildings, Forest Hill, London, S.E.23. Registered December 8. Nom. capital, £2,000 in 10s. shares. To adopt an agreement with P. N. Crees and P. I. Keane, and to carry on the business of manufacturers of glues, enamels, paints, oils, adhesives, chemical compounds, cellulose products, and builders' and painters' requisites, etc. Directors: P. N. Crees and P. I. Keane.

SANGERS, LTD. Registered as a "public" company on December 8. Nom. capital, £500,000 in 250,000 7½ per cent. cumulative preference shares (with priority as to capital) of £1 each, and 1,000,000 ordinary shares of 5s. each. To acquire the business heretofore carried on by H. Sanger, E. Sanger, F. J. Smith, E. A. Smith, J. G. Sanger, P. J. Lushington, and P. S. Smith, as "Sangers," at 258, Euston Road, N.W., and other places, and to carry on the business of wholesale or retail chemists and druggists, manufacturers and importers of and dealers in all kinds of salts, acids, alkalis, drugs, etc. Directors: E. Sanger, 26, Montague Square, London, W.1. H. Sanger, F. J. Smith, E. A. Smith, J. G. Sanger, P. J. Lushington, P. S. Smith.

Rubber and Fatty Oils

Changes from the Colloid-Chemical Standpoint

A JOINT meeting of the Manchester Section of the Society of Chemical Industry and the Manchester and District Section of the Institution of the Rubber Industry was held in Manchester, on Friday, December 7, Mr. W. C. Smith presided.

In presenting a paper on "Chemical Changes in Rubber and in Fatty Oils," Dr. L. Auer, of Budapest, stated that his paper dealt chiefly with the application of the principles of colloid chemistry in the rubber and fatty oil trades. After making some introductory observations on the terminology used in colloid chemistry, the lecturer proceeded to deal with rubber latex, emphasising particularly the distinction between chemical polymerisation and physical aggregation. The coagulation of latex was an aggregation process, the resulting raw rubber being a two-phase isocolloidal jelly system.

Fatty oils were then considered as two-phase isocolloidal systems, and their drying, bodying, and gelation reviewed from a colloid-chemical standpoint. These processes were considered to be purely physical in nature. Work was described which showed that gases played a very important part in these processes, a minimum concentration of gas being necessary before they could be brought about. Subsequent chemical action of the gas was only of secondary importance. This theory of coagulation by means of gases was then applied to the coagulation of latex by air and the aggregation of isocolloidal systems in general. The relationship between the drying or oxidation of fatty oils and the vulcanisation of such oils and of rubber was then dealt with. Vulcanisation was considered to be a purely physical process, and the work of various investigators was dealt with from this standpoint.

The two-phase theory of isocolloidal systems had served recently as a starting point for the production of modified oil products (rubber substitutes) having properties similar to those of rubber. The action of various electrolytes on fatty oils and resins was described, together with possible industrial applications of the resulting products. The lecturer concluded by pointing out similarities between rubber and fatty oil products, and described recent work on the action of electrolytes on rubber itself.

Yorkshire Dyers and Safeguarding

THE Bradford branch of the Amalgamated Society of Dyers has passed a resolution opposing the decision of the National Association of Unions in the Textile Trade to support an application by employers for safeguarding for the dress goods industry in the following terms:

"That this meeting, representing 5,000 members of the Amalgamated Society of Dyers, emphatically protests against the National Association of Unions of the Textile Trade pledging their affiliated unions on a minority vote to safeguarding, and dissociates this branch from the decision; and further, in view of the vote of our society's executive committee against the proposal, this meeting calls upon our executive to withdraw our two representatives from the N.A.U.T.T Safeguarding Committee."

Extending Our Knowledge of Vitamins

DR. KATHARINE COWARD, speaking on vitamins to the Pharmaceutical Society on Monday said that definite progress had been made on fresh lines of thought. Reviewing the knowledge gained of the four vitamins, A, B, C and D, she said that a few weeks ago Professor Mellanby recorded some valuable experiments on what he called the "anti-infective property" of vitamin A. Statements appeared in the Press concerning the dethronement of vitamin D, together with demands that scientists should make up their minds which vitamin was most necessary for the well-being of the community.

"It is easily conceivable," said Dr. Coward, "that in the absence of any one vitamin the animal's power of resistance may be lowered, and scientists will never claim that any one vitamin is of greater value than the rest. Each one has its specific uses, and probably many more than are at present suspected."

Manufacturers of foodstuffs no longer had any excuse for making false claims for their products. Instead of assuming the presence of vitamins in their foods they could now obtain exact knowledge on the subject.